

Manufacturing Recovery:
A Networked Approach to Green Job Creation
in Massachusetts Gateway Cities

by

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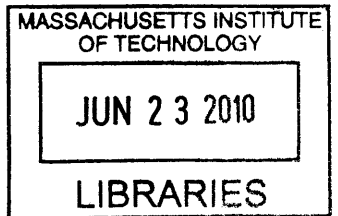
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ABSTRACT

In this thesis, I compare workforce development planning in Lawrence and Lowell, Massachusetts, two of the state's older industrial "Gateway" cities. I specifically examine local planning processes around job creation in the clean technology (clean tech) sector. Contradicting the notion of the cities as "urban twins," I find that Lawrence's original physical and social design led to a pattern of economic disinvestment and a deficit of municipal planning capacity compared to Lowell. Today, Lawrence experiences the resulting disadvantage when it competes with Lowell for clean tech economic development funds.

I argue that state and federal policymakers should recognize critical differences that exist among even the seemingly most similar communities and implement strong, place-based programs so that investments in green workforce development do not perpetuate the historic inequities that cities such as Lawrence face. I conclude by proposing a networked planning strategy that, with stimulus from the state and federal governments, could help Lawrence and Lowell to leverage more effectively and collaboratively their respective assets in support of a regional green economy.

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– Introduction –
“In the Distance is the Tsunami and Everyone Knows it’s Coming”

Green Jobs on the Ground – Lawrence, Massachusetts

In July of 2009, as the economic crisis bore down on cities across the U.S., the Boston Globe reported its particularly crippling effect on the small city of Lawrence, Massachusetts:

“Nowhere is the recession’s destructive power felt more than in Lawrence. This city of 70,600 - one of the nation’s first planned industrial centers, its seal bearing the word ‘industria’ and the image of a bee - has 5,217 jobless residents. The unemployment rate in June was 17.3 percent, the highest in Massachusetts ... Almost double the state unemployment rate of 8.7 percent. Higher even than battered Michigan’s 15.4 percent, the highest of any state. The numbers are staggering and psychically punishing for a city that thought it was on its way back.”¹

Unemployment in Lawrence outpaced all other cities and towns in the Merrimack Valley, where Lawrence is located, and across the state of Massachusetts as well. Lawrence, however, is not alone among once-thriving industrial cities that had thought – or at least hoped – that they might be on their way back, only to be thrust into deeper unemployment. In the early days of the recovery effort, the marriage of state and national economic recovery programs to grow the clean energy sector and the desperate, entrenched need for employment in these communities seemed like a perfect match. But how well are green jobs meeting the need in Lawrence?

Joaquin Santana is one of the fortunate Lawrence residents who has managed to stay employed through the crisis. He moved to the United States from the Dominican Republic in 2005 and after spending a night in New York, he came to Lawrence, joining the city’s predominantly Dominican immigrant and Latino population.

¹ Sarah Schweitzer, “Lawrence reels as hope recedes,” *Boston Globe*, July 22, 2009, http://www.boston.com/news/local/massachusetts/articles/2009/07/22/hope_recedes_in_lawrence_where_unemployment_rate_is_highest_in_mass/.

Currently, Santana works for the food service provider, Sodexo, which maintains a contract with the Merrimack Valley offices of the pharmaceutical giant, Pfizer. Coming from a sun-drenched city, he's had a longtime interest in the idea of solar power and first heard people talking about green jobs one day at Lawrence CommunityWorks (LCW), a community development corporation dedicated to the City's revitalization. Santana is one of 6,000 Lawrence residents who are members of the organization. "I was talking with Annery Butten," he recalls. (His English has developed well during his time in Lawrence, but on this day, we speak in Spanish.) "She's in charge of Family Asset Building with Lawrence CommunityWorks. She told me they were going to be offering [green job] courses, so I let her know I was interested. But the courses never materialized."²

The program that LCW had hoped to implement in May 2009, the State's green job training "Pathways Out of Poverty" program, was allocated instead to Lawrence's neighboring city, Lowell. According to Mary Beth Campbell, Workforce Development Director with the Massachusetts Clean Energy Center, both the Lawrence and Lowell applicants were high on the list of contenders, but the application from Lawrence CommunityWorks (LCW) ranked just below that from Jobs for Youth, serving Lowell. With only five grants to distribute, state officials opted to pass over the Lawrence bid in the interest of achieving a greater statewide distribution of funds. They also assumed that resources provided to Lowell, less than ten miles away, would extend to Lawrence, given the cities' proximity to one another.³

Santana's hope for training in solar installation has yet to be realized. "I've given up, he says, but then qualifies his statement. "No, I haven't totally given up. I am going to keep

² Joaquin Santana, "Personal Interview," March 27, 2010.

³ Marybeth Campbell, "Personal Interview," In Person, December 21, 2009.

working in my job and see. I'll keep looking and if a job shows up, then ...” He pauses before making his final point. “I would really like to work in clean energy.”⁴

Today, Lawrence is home to a majority Latino and immigrant population and known as one of the state's eleven “Gateway Cities,” a class of older de-industrialized cities in Massachusetts that act as entry points for thousands of immigrants each year. The term “gateway” emphasizes the hope immigrants bring when they enter the country and the hope that these communities can provide a launching pad to prosperity. In reality, the term refers to cities with histories of intractable poverty and that today, struggle to compete against other Massachusetts cities and towns. The Gateway Cities include Brockton, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Lowell, New Bedford, Pittsfield, Springfield and Worcester. The unemployment crisis has taken a terrible toll on all of them. (Appendix 1 includes a map representing the unemployment rate across the Gateway Cities.) Over the last thirty years, the state has periodically targeted these cities for revitalization funds. In this context, the recession and the government's response pose the following question: How well will state and federal stimulus programs serve Lawrence and other cities that suffered chronic poverty and unemployment long before this particular crisis ever hit?

“In the Distance is the Tsunami”

When the July 2009 Boston Globe article came out, I was working on a graduate school research project in Lawrence. I was studying with the planning process around the anticipated arrival of stimulus funds for green jobs. I had undertaken the project hoping that by gaining insight into this process in one of the Gateway Cities, I might better understand the challenges that would affect these communities as a group. In one interview, a staff person involved in local workforce development made a comment that, for me, illuminated a

⁴ A short film that includes excerpts of this interview is available online:
<http://techtv.mit.edu/videos/6665-green-jobs-on-the-ground---lawrence-ma>

critical local challenge to the success of any public green jobs program in Lawrence. “It’s really sad because usually we’re scrounging for money,” he said, “but now that there is money flooding in, we’re not prepared at all. In the distance is the tsunami and everyone knows it’s coming.”

Public investment as tsunami. The power of the metaphor stuck with me. While I cannot be certain that he meant to liken the infusion of federal and state funds to a natural disaster, I began to wonder if his comment reflected a deeper, more systemic obstacle to revitalization in the city. What would cause a community that had suffered decades of disinvestment, only to be further pounded by the current crisis, to experience this sense of immobility in the face of federal and state aid? Is there a particular planning paralysis that stems from a belief that a place is somehow “less than,” corroding a city’s ability to plan? A legacy of historical neglect of traumatic proportions? Does it carry over to other Gateway Cities? If so, and if the State of Massachusetts seeks to promote clean energy as an emerging sector of the State economy and target economic growth to the Gateway cities, then what effect does this local sense of powerlessness have on widespread recovery efforts? What might help to overcome it? Or is the tsunami image a harbinger of a coming, and worse, economic disaster – one that will occur if we do not plan well now to prevent it? How might an analysis of Lawrence help answer these questions?

I soon discovered that I was not alone thinking that lessons from Lawrence’s stagnant labor market might apply in other places. A July article in *USA Today* proclaimed,

“The situation in Lawrence may be especially acute, but it’s not unique ... Communities such as Lawrence are grappling with the pervasive, lingering joblessness that economists say lies in the nation’s future. Already, the percentage of the U.S. labor force that has been unemployed for more than six months is near an all-time high ...”⁵

A Boston University study found a deepening of the crisis among certain populations for the

⁵ David J. Lynch, “Slow labor market takes toll on Lawrence, Mass.,” *USAToday*, July 8, 2009, http://www.usatoday.com/money/economy/2009-07-07-lawrence-mass-industrial-unemployment_N.htm.

last quarter of 2009: “A true labor market depression faced those in the bottom two deciles of the income distribution; a deep labor market recession prevailed among those in the middle of the distribution, and close to a full employment environment prevailed at the top.”⁶ The most devastating effects of the crisis were born by “young, less well-educated workers, especially black and Hispanic high school drop-outs and certain categories of service workers, such as food preparers and building cleaners. Blue collar workers were also hammered, especially those in the construction industry.”⁷ Among households with annual incomes of 12,499 dollars or less, the study reported a 30.8 percent joblessness rate for that period – more than five points above the average unemployment rate during the Great Depression. They estimate underemployment in this group to have been 20.6 percent and joblessness among those making between 12,500 dollars and 20,000 dollars to have been 19.1 percent.⁸

This crisis is neither race, class nor place-neutral. Its pernicious effects are most deeply felt among those who have suffered the worst of the country’s income inequality and, as in Lawrence’s case, began experiencing the devastating effects of the foreclosure epidemic as early as 2003. If Lawrence’s situation is “acute but not unique” and this “lingering joblessness” will continue to lie in the nation’s future, then bold, place-based action will be necessary. Careful analysis of the effectiveness of such action, yielding a deeper understanding of cities’ obstacles to successful investment – obstacles that are in some sense, relics of long-term neglect – will also be necessary.

To explore these questions, I set out to examine and compare planning for the green economy – a focal point of the national stimulus – as it was taking place in two of the Gateway Cities, Lawrence and Lowell. My expectation was that by analyzing the planning

⁶ Bob Herbert, “The Worst of the Pain,” *New York Times*, February 8, 2010, <http://www.nytimes.com/2010/02/09/opinion/09herbert.html>.

⁷ Ibid.

⁸ Ibid.

process for clean energy workforce development in two communities, I might get a better sense of the challenges that the Gateway Cities face as a group, and what challenges may be Lawrence-specific. I also hoped to gain insight on successful interventions that acknowledge the local nature of certain development obstacles, and on workforce programs that could be designed and implemented to overcome these obstacles in a range of places.

Why Lawrence and Lowell?

Lowell

I trace my interest in improving low-income people's access to opportunity in the green economy to my relationship with my paternal grandmother, Stella Sperounis. Born in Lowell in 1916, Stella's parents took her to their village in Southern Greece when she was an infant. When she turned 18 (having missed any opportunity for an education), they sent her back to Lowell, with hopes of arranging a marriage for her there. My grandfather, Sam, happened to move from Greece to Lowell that same month. Unlike Stella, Sam had been born in Greece, but raised in the U.S. until he turned 15, when a judge deported him for armed robbery. Following completion of the four-year term of his deportation, Sam's parents brought him back to Lowell, hoping to marry him to someone and keep him out of trouble. A connection between Sam's father and Stella's uncle led to a wedding in Lowell in July 1935, shortly after Sam's arrival back in the U.S.

Stella divorced Sam fifteen years later. Illiterate in both Greek and English, and now a single mother with three sons, she moved with them to the city of Lynn (on the Massachusetts North Shore) in search of work and to be closer to her sister, her only relative in the U.S. Her options in Lynn, when she had any, were limited to menial and unskilled labor in leather factories. She raised her sons on a combination of factory wages, public assistance and money the boys could earn (my father began working at eleven). My father

told me stories of Stella's life and, at a young age, I was struck by the injustice in the few opportunities and grueling work conditions that she found in the U.S. She died when I was eight.

As I was growing up, my father's position as a professor and administrator at the University of Massachusetts Lowell helped me to maintain a connection to the city itself, a connection that grew as the result of family dinner conversations about his work and the role of a university in a struggling local economy. In retrospect, I can see how this connection to my grandmother and to the city of Lowell have influenced my interest in workforce programs that target the persistent and insidious obstacles that low-income people face in education, job training, recruitment, and retention. It was these connections, in part, that led me to Lawrence.

Lawrence

I worked as a community organizer at Lawrence CommunityWorks over a period of four years after completing a degree in Politics at Oberlin College. Founded in 1999, LCW implemented a new approach to community development, relying on the direct participation of, and relationships among, its members. Called Network Organizing, the approach builds on well-known community organizing practices, but is guided by network theory.⁹ Bill Traynor and Jessica Andors, Co-Executive Directors of LCW and two architects of the strategy, write that the strategy evolved as a direct response to the Lawrence environment:

“[At LCW] we joke that, for years in our city, everyone has had just enough clout to stop anyone from doing anything, but not enough to actually get anything done. Lawrence is one of those places where disengagement has left a vacuum of energy, vision and leadership in public life. The result is a city that has stagnated physically and economically for years, unable to adapt to a changing economy and population and resistant to individual efforts to improve it.”

⁹ William J. Traynor and Jessica Andors, “Network Organizing: A Strategy for Building Community Engagement,” *Shelterforce*, April 2005, <http://www.nhi.org/online/issues/140/LCW.html>.

The Network Organizing response has been proactively to connect people to each other, information and resources. Community groups, for example, should be flexible, easy to join and willing to change course when necessary. Residents should have many rich and rewarding ways to participate in public life, get to know people they would never otherwise meet, and most importantly (but perhaps least obviously), have fun with each other. Now with a membership of over 5,000 Lawrence residents, the strategy has attracted national attention.

During my time at LCW, I helped to craft the Network Organizing strategy. In English and Spanish, I introduced new members to the many ways to get involved – from adult savings programs to a political leadership development institute to a youth empowerment program – and designed systems to help members become more active in the network. I also helped to organize the Lawrence City Budget Campaign, an effort to bring more transparency to City’s budget process.

“Urban Twins”

According to former State Senator and Lawrence native, Patricia McGovern, “To understand Lawrence, you have to understand Lowell.”¹⁰ People *outside* the Merrimack Valley, where both Lawrence and Lowell are located less than ten miles apart, seem to think of them as interchangeable – same textile manufacturing history, same geographic region, same poverty levels, same development potential. The “urban twins,” they call them.¹¹ But people *from* the Valley say that the development trajectories of Lawrence and Lowell have been dramatically different and that they are in fact strikingly different places. Early in my research process, Mary Beth Campbell, Workforce Development Director of the Massachusetts Clean Energy Center, made a comment that highlighted how the assumption

¹⁰ Patricia McGovern, “Personal Interview,” December 15, 2009.

¹¹ John Powers, “Of mills and momentum,” *Boston Globe Magazine*, May 11, 1997.

of “sameness” would prove relevant to the question of green job creation:

“The perception really is – and I admit that’s it probably my own too – that Lawrence and Lowell are one-and-the-same. Education and awareness of the differences is really important.”¹²

The disparity between the perception and reality of Lawrence and Lowell as urban twins, underscores McGovern’s comment that to understand the former, one must understand the latter. Indeed, Lawrence’s creation and physical design draw heavily on the Lowell experience, and since its inception, Lawrence’s development has been inherently regional and tied in part to that of its upriver “twin.” In a context where resources are scarce and motivation can be politically opportunistic however, the two cities are sometimes pitted in a zero-sum development game. It has become apparent that if the development challenges that Lawrence has faced are regional in nature, then solutions will be as well. As long as the two cities are forced to compete, Lawrence will struggle to win, leaving the region less well off as a whole.

Methodology

While the comparative analysis I provide here is specific to the histories and present-day experiences of planning in these two cities, I hope that by understanding how their development histories influence their approaches to green jobs planning, we might learn something about the role of the state in supporting clean-energy based “pathways out of poverty” in other Gateway Cities and perhaps beyond as well. To illuminate the notion of historically entrenched planning paralysis – and more broadly, the existence of a “planning culture” – in the Lawrence or Lowell contexts, I sought the narratives of key community leaders. Through their stories of the cities’ development histories and of attempts thus far to encourage green job creation, I worked to unpack this community psychology and gain a

¹² Campbell, “Personal Interview.”

more nuanced, insider view of the cities' respective approaches to planning. Where possible, I provide supporting data and secondary sources, drawing on census information, historical analyses, press releases and economic development and planning reports.

I found resonance with the idea of a “dynamic view of planning culture,” articulated by MIT Professor of Urban Development and Planning, Bishwapriya Sanyal, who emphasizes the role of political economy in the development of local planning culture.¹³ Understanding culture to be non-static and politically malleable, I frame planning culture in particular as a process of “continuous social, political and technological change.”¹⁴ This view of culture as a continuum underscores the value of developing a sophisticated understanding of a place and its politics to create more appropriate place-based strategies for green job creation.

I also draw on the thinking of Cornell Professor of City and Regional Planning, John Forester, who writes that, “stories are not just idle talk; they do work. They do work by organizing attention, practically and politically, not only to the facts at hand, but to why the facts at hand matter.”¹⁵ This manner of “organizing attention” may be applied at the policymaking level so that policies may respond better to the intricacies of place than most currently do.

To collect stories from a broad range of stakeholders with professional ties to and/or intellectual interest in Lawrence and/or Lowell, I conducted thirty-three interviews, ranging in length from twenty to seventy-five minutes, some in person and some by telephone. Interviewees included city and state officials, a local job seeker, and representatives from community-based non-profits, community finance, regional planning, workforce

¹³ Bishwapriya Sanyal, “Hybrid Planning Cultures: The Search for the Global Cultural Commons,” in *Comparative Planning Cultures* (New York: Routledge, 2005), 22.

¹⁴ Ibid, 22.

¹⁵ John Forester, *The Deliberative Practitioner: Encouraging Participatory Planning Processes* (Cambridge, Mass.: MIT Press), 29.

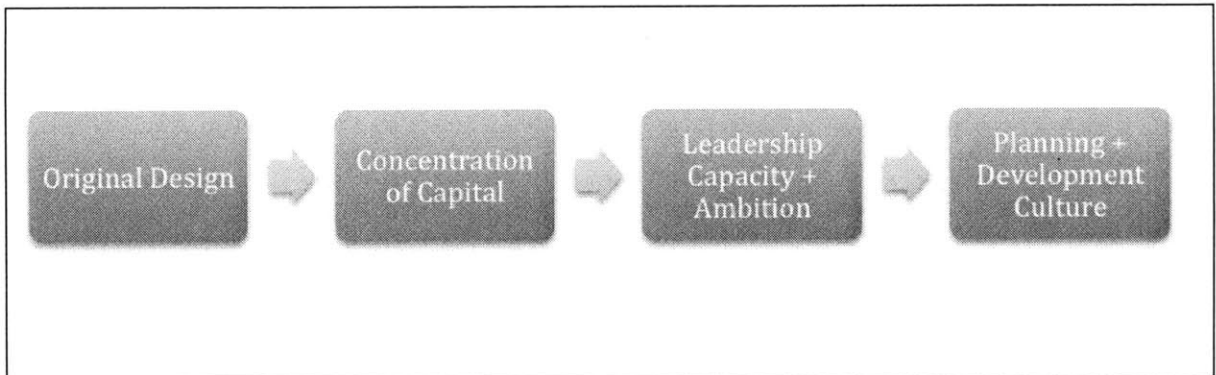
development, and higher education. I also had the opportunity to gain insight from interviews with researchers concerned with older industrial cities outside of the Massachusetts context.¹⁶

Findings

My research revealed the following findings:

1. The planning cultures of Lawrence and Lowell are dramatically different, challenging the notion of them as “urban twins.” In particular, I find that *their trajectories since deindustrialization were, in some ways, pre-determined by their original designs*. Although the wealth generated by the textile factories in each city largely flowed into institutions and families based in cities and towns such as Boston, Cambridge and Andover, Lowell was originally designed to permit a small concentration of wealth that Lawrence was not. When industry left, the economic capital that remained in Lowell was able to support the rise of a small political elite. This elite pursued a post-industrial vision for the city’s revitalization and developed sufficient access to state and federal funds to support this vision. In Lawrence, the loss of the city’s sole planning entity (its founder, the Essex Company) and the absence of any wealth within the city limits created a vacuum of power and planning capacity. *Historic differences between Lawrence and Lowell have, in turn, had significant impact on each city’s ability to plan for, access, leverage, and implement state, federal and private economic development programs*. The flow chart below represents the chain of events, beginning with original physical and social design, that over time, have shaped the development of political leadership and planning culture in each city:

¹⁶ As is the case in most social science research and, arguably, in other forms of research as well, the methodology is inexact at best. However, I – and no one else – bear responsibility for any errors contained in these pages.



2. Today, the two cities' planning for workforce development in the clean energy sector reflects their respective histories and approaches to planning; it follows that *green economic development will not necessarily proceed differently than previous attempts at economic development*. Relative to Lowell, Lawrence will lose. While there is not a great deal of workforce development activity taking place yet in either community, interviews with stakeholders revealed that in Lowell there is a higher degree of preparedness, both in leadership capacity at City Hall and UMass Lowell, and in the ability to form the partnerships that will be necessary for the city to take advantage of future opportunities that will benefit Lowell residents. Interviews with Lawrence civic leaders, as well as unsuccessful attempts to reach Lawrence City officials to discuss the question of planning for green jobs, left an impression of a general lack of readiness to take advantage of upcoming opportunities for economic development in the clean energy sector.
3. In administering the Pathways Out of Poverty Grant, the State assumed that resources allocated to Lowell would flow to Lawrence. Workforce development practitioners in Lawrence, however, argue that this is not realistic given language, transportation and childcare constraints on Lawrence workers and an overall lack of institutional coordination between the two cities. Although one interviewee said that, given the opportunity, he would travel the ten miles to Lowell to participate in solar installation training, *it is not clear that there exists the type of regional cooperation between Lawrence and*

Lowell that the State assumes.

4. While the Gateway Cities classification helpfully illuminates key challenges faced by certain Massachusetts cities, it also obscures critical differences in their planning cultures and capacities. As a result, it undermines the implementation of programs in cities that do not have a coherent and organized approach to long-range planning and growth.
Critical differences in local planning capacity between Lawrence and Lowell, and also potentially among other Gateway Cities, point to a need for a strategic, asset-based, and networked approach to collaborative green job creation. As an example of this type of networked planning, I outline in Chapter Four an approach that, with stimulus support from the state and federal governments, might help Lawrence and Lowell, as well as other Gateway Cities, to leverage more effectively their respective assets and support a regional green economy. I show how the application of certain Network Organizing principles developed by LCW could help Lawrence to overcome development obstacles rooted in its original design and exacerbated by constraints of the Gateway Cities classification and the absence of strong regional planning in Massachusetts.

Manufacturing Recovery

I use the term “manufacturing,” in part, to highlight the historic, and potentially future, role of Lawrence and Lowell as major centers of the state’s manufacturing economy. More importantly though, I use the term for its other meaning: “To produce according to an organized plan and with division of labor.”¹⁷ When connected to the idea of economic recovery, this particular notion of manufacturing underscores the strategic and long-range planning that will be necessary in order for Lawrence, Lowell and their residents to ever fully recover – not only from the current crisis, but also from the compounding effects of a half-

¹⁷ “Manufactured,” in *Merriam-Webster Online*, <http://www.merriam-webster.com/dictionary/manufactured>.

century of state and federal disinvestment.

The recovery that planners and policymakers manufacture should be both grounded in local conditions (i.e. place-based) and regional in scope. Even the most innovative, but prescriptive, green job creation programs may go nowhere if they fail to account for the histories, political economies, planning environments and asset-bases of the communities and regions in which practitioners attempt to implement them. However, regional planning, as defined by geographic boundaries and frequently lauded in progressive planning circles, is not necessarily, in and of itself, a good thing. What and who, after all, defines the region? To what end? As the Lawrence-Lowell case shows, certain forms of regionalism can, albeit unintentionally, put cities in competition with each other, thereby perpetuating the disadvantage that struggling cities already face and further contributing to their decline. Implementation of a Gateway Cities green economic development program should be determined by an asset-based analysis for each city that defines its green job/clean tech region in terms of existing and potential network ties. By replacing the idea of regions with networks, I seek to underscore the ever-shifting (and often arbitrary) boundaries of our economic regions and emphasize the need for stronger connections and relationship-building to support a robust, statewide planning infrastructure.

In the interest of manufacturing a green recovery for cities that need recovery most, the state should first build in incentives to promote network organizing and planning among communities so that they can better articulate collective needs. Legislation to achieve this kind of regional or inter-municipal planning, while not currently in the works, would also be instrumental. Once these needs have been articulated, the government can and should be more attentive to these networks. Ultimately, the state, with financial stimulus from the federal government, should be a stronger source of support for inter-city planning and collaboration, counteracting the competition that is now second nature among cities and towns in Massachusetts.

A core argument of this thesis also rests on the fact that not all older industrial cities should be engaging in “green economic development” through production or installation of goods related to directly tied to energy efficiency or renewable energy. There are examples of cities such as Toledo, where firms have successfully adapted their strengths in glass technology and manufacturing base to respond to new demand for thin film solar panels,¹⁸ but not every firm or community can transition in this way. For example, the building stock in almost every community may benefit from some degree of weatherization – and local residents may, at least temporarily, benefit from the jobs that weatherization creates – but the production of materials to support renewable energy is not necessarily a boon for every city and town. The critical need then is to encourage towns and cities to go through a local planning process to determine what their assets are, how they can capitalize on certain clusters, how those assets connect to a regional strategy and what state and federal opportunities they might access and leverage to support growth;¹⁹ doing so will encourage cities with weak planning capacity to develop more robust planning cultures. In some cities, there may be opportunities to incubate or bring in firms whose products are not necessarily “green,” but whose manufacturing processes are. This more expansive notion of green economic development or “clean tech” is currently promoted by the Lowell Center for Sustainable Production at UMass Lowell²⁰ and also by the Pew Charitable Trust.²¹

Currently, there is political will at the federal level to understand the specificity of place and to move beyond a one-size-fits-all approach to urban policy. Secretary of Housing and Urban Development, Shaun Donovan, describes this as the “New Federalism”:

¹⁸ Joan Fitzgerald, *Emerald Cities: Urban Sustainability and Economic Development* (New York: Oxford University Press, 2010), 55.

¹⁹ Jennifer S. Vey, “Personal Interview,” December 3, 2010.

²⁰ *Clean Tech: An Agenda for a Healthy Economy* (Lowell Center for Sustainable Production, University of Massachusetts Lowell, December 2007).

²¹ *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America* (Washington, D.C.: Pew Charitable Trusts, 2009).

“This isn't about returning to the old way of doing business - the one-size-fits-all approach in the development of public housing or urban renewal.’ It's about using new tools that help us partner with local governments in ways that recognize the variations of place and the communities we all serve in one way or another.’ That is the New Federalism.”²²

The current federal political climate is conducive to a more place-based approach to green job creation in the Gateway Cities. The time to act is now.

²² Shaun Donovan, “A New Federalism Focused on Place” (Harvard Graduate School of Design, October 26, 2009).

– Chapter 1 – Gateway Cities and the Green Economy

“They believe they are less”

Drawing on its nineteenth century industrial base, Massachusetts became an engine of U.S. wartime manufacturing in the middle of the twentieth century. In just two years, the number of manufacturing jobs in the state climbed by more than 125,000 – from 534,000 in 1939 to almost 661,000 in 1941.²³ By 1943, the number reached 801,000, claiming almost 45 percent of jobs statewide at a time when manufacturing jobs nationwide accounted for only 38 percent of jobs.²⁴ In the city of Springfield, the Springfield Machine and Foundry Co. made engines for Liberty ships; the General Electric in Lynn manufactured aircraft engines; Sprague Electric in North Adams built electrical components for high tech weaponry; the Gift Wrap Company of Lawrence transitioned to production of khaki webbing for parachutes.²⁵

Following the war, manufacturing in Massachusetts began a slow, but also uneven period of decline. Wars in Korea and Vietnam led to episodic increases in production of military goods and the rise of the mini-computer industry in the 1970s and early 1980s brought growth to the Route 128 region, where investment in high technology rivaled that in Silicon Valley.²⁶ But beginning in 1984, a set of conditions conspired to cut the number of Massachusetts manufacturing jobs in half. Those conditions included an overall decrease in defense spending, the collapse of the Massachusetts-based mini-computer companies, and

²³ *Staying Power: The Future of Manufacturing in Massachusetts* (Center for Urban and Regional Policy: Northeastern University, July 2008), 12.

²⁴ *Ibid.*, 12.

²⁵ *Ibid.*, 12.

²⁶ *Ibid.*, 13.

the rise of outsourcing the production of goods and parts once supplied by in-state manufacturers.²⁷

The loss of the state's manufacturing base took a particularly profound toll on the cities that had been created to support it. As the economies declined in these once thriving hubs of American textile, machine tool, paper, shoe, defense and high-tech electronic manufacturing, they became home to a disproportionate percentage of residents living in poverty and at the same time were absorbing a large percentage of the state's incoming immigrant population. Eleven cities outside the Route 128 corridor were particularly hard hit, losing over 134,000 manufacturing jobs from 1960-2007 and accounting for over one-third of job losses across the state.²⁸ Compared to Greater Boston, where 42 percent of residents had a four-year college degree, only 16.5 percent of residents in these cities had comparable education.²⁹ Without a strong tax base, city governments found themselves strapped for cash and were struggling to provide basic services to their residents. Dubbing them the "Gateway Cities," the State sought to channel funds towards revitalizing these communities.

The Gateway Cities moniker originated with Massachusetts State Senator Pat McGovern who, from 1981-1993, represented the State Senatorial District that includes Lawrence.³⁰ As Senator McGovern recalls, she asked her colleagues one day, "“why don't we do something, have a special pot of money for all these areas who are absorbing the new immigrants? We could give them more money and help them with their schools.”"³¹ Around this time, Senator McGovern also observed something about this particular group of

²⁷ Ibid., 13-14.

²⁸ *Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal* (MassInc and the Brookings Institution, February 26, 2007), 6.

²⁹ Ibid., 7.

³⁰ District also includes the towns of Andover, Dracut and Tewksbury.

³¹ McGovern, "Personal Interview."

cities, a sense of hopelessness that I would sense among certain stakeholders during my green jobs research in Lawrence almost three decades later:

"There is an old mill town way of looking at the world. I found this out when I was in the Senate and went to Southeastern Mass and met with the Fall River/New Bedford people. I realized that they have been acculturated over generations to think less of themselves. For generations, the residents of the mill cities have been told they're less. Those who could, got out and the ones left behind were told not to think well of themselves. They internalized it. They believe they are less."³²

The State Legislature funded Gateway Cities programs through the early 1990s. With budget cuts, however, the program languished.³³ Then, in February 2007, MassInc, a Massachusetts think tank, partnered with the Brookings Institution to issue a report on the Gateway Cities, reviving the moniker and calling for economic investment in those eleven cities, all outside the Boston area and all struggling, to varying degrees, to adapt to the knowledge- and technology-oriented economy.³⁴ The report found that economic growth had been concentrated around Greater Boston area and that, with regard to Boston, the Gateway Cities had suffered in the areas of job creation, knowledge-industry employment, educational attainment, and incomes.³⁵ The MassInc Gateway Cities classification became a "rallying cry" for stronger legislative support.³⁶ The cities include: Brockton, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Lowell, New Bedford, Pittsfield, Springfield and Worcester.

Indeed, some Massachusetts cities have fared far better than others in reinventing themselves since manufacturing first moved to the South in search of cheaper labor, and eventually off shore. Boston has emerged as a health care powerhouse, political hub, center

³² Ibid.

³³ Ibid.

³⁴ *Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal*. The Gateway moniker is specific to this class of Massachusetts cities, but it joins an emerging school of thought on America's older, but smaller industrial cities, largely concentrated in the Northeast and Midwest. See: Lorlene Hoyt and Andre Leroux, *Voices from Forgotten Cities* (PolicyLink, 2007).

³⁵ *Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal*, 6.

³⁶ "Hidden Assets: Rebuilding the Gateway Cities," *Architecture Boston*, Summer 2009, 16.

for higher education, historical tourist destination, major player in finance, and urban anchor of New England - home to the Red Sox, Celtics, Bruins, entertainment and food venues, and an international airport. Cambridge has also created an identity around MIT and Harvard, a vibrant biotech and life sciences center, and a string of commercial and cultural “squares.” It is within this mix of metropolitan environments that the Gateway Cities have to establish identities and offerings that connect to wider regional markets.

Effective, long-term and equitable growth for Massachusetts will require that the Gateway Cities be able to attract and retain residents and jobs. From a Smart Growth perspective, such cities have a level of density that justifies further development. They offer – or have the potential to offer – walkable neighborhoods, transportation access, and a critical mass of stores, restaurants, services, affordable housing and historic places. As urban areas situated throughout the state, their revitalization is essential to regionally organized state economic growth and to the state’s environmental health. Many of them built to harness the renewable energy generated by the state’s major rivers, they are, in a sense, the state’s original “green cities.” Strengthening the Gateway Cities, however, will require a coherent policy agenda that (1) supports smart, equitable and coordinated reinvestment, that (2) allows them to improve their quality of life and that (3) enables them to collaborate wherever possible and, as a class, compete better for growth.

These cities face many obstacles to this effort. In its report, MassInc discussed the impediments to the revitalization of the Gateway Cities. Three of these obstacles have particular importance in the context of local green workforce planning. The first is the issue of job access. The cities’ relative geographic isolation from the state’s economic mainstream, concentrated in Greater Boston, results in the overall exclusion of residents from jobs. The second challenge, also discussed in reports on the nation’s smaller industrial cities by PolicyLink, is weak governance. MassInc found that among the Gateway Cities, the departure of large companies and middle class residents had depleted the communities’ civic

and political infrastructure: “Decades of disengagement have left a vacuum of energy, vision, and leadership in many cities—a vacuum in which anemic participation and reduced accountability has led, in some cases, to municipal drift and decay.”³⁷ The third issue is one of weak regions. In Massachusetts, state rules, laws, and restrictions effectively discourage attempts at cooperative planning and development among local governments. Cities and towns have a long history of autonomous decision-making. In this context, collaboration requires the difficult bridging of the highly individualized planning cultures that have evolved over time. A report on small cities’ revitalization issued by the Massachusetts Citizens Housing and Planning Association (CHAPA) in 2006 explained the problem and the competitive dynamic that is generated:

“Home Rule sets up a situation where communities feel they need to compete for resources instead of appreciating the interdependence of neighboring areas and planning more regionally. This problem is exacerbated when the competition for resources and new business is very intense ... most communities need better support, including incentives and technical assistance, in order to effectively work together.”³⁸

Since release of the MassInc report, and the convening of the Gateway Cities Mayors’ Caucus, the Gateway Cities have garnered renewed attention from some state agencies. In “A Framework for Action: The State Regional Economic Development Strategy,” released by Governor Deval Patrick in January 2009, the state’s Executive Office of Housing and Economic Development underscored the important role of the Gateway Cities (referred to as “regional cities”) in the state’s overall economic health:

“The rebirth of the state’s regional cities is essential if Massachusetts is to have vital regions with sufficient locations to grow, people to work and places to live ... Long-term improvements in the regional cities will require the sustained commitment of a range of stakeholders – public and private – that firmly believe that regional prosperity – Massachusetts’ welfare – is linked to opportunity and growth in our cities.”³⁹

³⁷ *Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal*, 33.

³⁸ *The State of the Cities: Revitalization Strategies for Smaller Cities in Massachusetts* (Citizens’ Housing and Planning Association, December 2006), 47.

³⁹ *A Framework for Action: The State Regional Economic Development Strategy* (Executive Office of Housing and Economic Development, Commonwealth of Massachusetts, January 28, 2009), 30.

Among the action steps towards revitalization of these cities, the Governor lists the need to foster, within and around the cities, short and long-term growth in the life sciences, clean energy, creative economy and manufacturing sectors. (Appendix 2 lists specific state-led grant programs that either directly target or include support for the Gateway Cities.)

The Gateway Cities classification helpfully points to the shared characteristics of certain places across the state that once fueled the state's industrial economy and it has served as a useful branding point to steer resources to these eleven cities. As evidenced by the Lawrence-Lowell green jobs case study however (discussed further in chapters two and three), the classification may be counterproductive in that it obscures critical differences that have evolved among the communities over time. McGovern, the originator of the concept, shares her reservations about applying the classification:

“There are some truisms with all these old cities. There are some basics that are the same, or that historically were the same, but they've all developed so differently that to put them all together is a huge mistake.”⁴⁰

In effect, the Gateway Cities classification – as well as assumptions of “twin” Gateway Cities, such as Lawrence-Lowell and Fall River-New Bedford – may create the false impression in the minds of policymakers that programs can meet the specific needs of struggling communities.

Massachusetts Invests in the Green Economy

With the Green Jobs Act in 2008, Massachusetts formally launched its campaign to leverage state resources in academic research, technological entrepreneurship and workforce development to spur the growth of the state's clean energy industry. Due to the community advocacy efforts of the Massachusetts Green Jobs Coalition (MAGJC), the Act contained references to strategies for “pathways out of poverty,” making explicit the state's intention

⁴⁰ McGovern, “Personal Interview.”

for job creation to address unemployment in low-income communities.⁴¹ In total, the state backed the legislation with 68 million dollars in funding over five years.⁴² The Act passed both the House and Senate with unanimous support.

Among its provisions, the Act included a stipulation for the creation of the Massachusetts Clean Energy Center (the “Center”), charged with providing seed financing for clean energy companies and with funding workforce development programs. As a quasi-public agency, the Center was charged with the following responsibilities:

1. Act as the state’s lead agency in promoting and developing jobs in the clean energy sector;
2. Promote research and workforce training in clean energy technology in state colleges and universities;
3. Stimulate the creation and development of new clean energy ventures;
4. Support existing clean energy companies;
5. Attract new capital and research facilities;
6. Foster collaboration among industry, government, universities, and financial sectors;
7. Conduct market research to identify barriers to creating and expanding a clean technology industry, including job training needs;
8. Support demonstration projects that are evaluated by independent, peer-review research institutions;
9. Serve as the state’s clearinghouse for information on clean energy industry; and
10. Promote programs and investments that lead to pathways toward economic self-sufficiency for low- and moderate-income communities in the clean energy industry.⁴³

The Act also created the Alternative and Clean Energy Investment Trust Fund (the “Fund”) to support the Center’s work in these areas. “The result of these efforts,” the Clean Energy Center announced on its website, “will be new technologies, new companies, and a workforce ready to roll up its sleeves to ensure Massachusetts’s place as a national clean

⁴¹ Vien Truong, *Summary of the Massachusetts Green Jobs Act of 2008* (Green for All, 2008).

⁴² Of the 68 million dollars, 43 million dollars came from the FY07 surplus and 5 million dollars per year from the Massachusetts Renewable Energy Trust, originally part of the Massachusetts Technology Collaborative and now part of the Clean Energy Center. “Governor Patrick Signs Bills To Reduce Emissions And Boost Green Jobs” (Governor of Massachusetts), http://www.mass.gov/?pageID=gov3pressrelease&L=1&L0=Home&sid=Agov3&b=pressrelease&f=080813_green_jobs&csid=Agov3.

⁴³ Ibid.

energy hub.”⁴⁴

By certain measures, Massachusetts appears well positioned to take a leadership role in the clean technology economy. The Clean Tech Initiative, established by the Lowell Center for Sustainable Production (based at UMass Lowell) in 2007, seeks to “create an identity for Massachusetts that makes it an international magnet for innovation and adoption of technologies that minimize harms and help to restore our health and our environment.”⁴⁵ The Agenda lists the assets in Massachusetts that will help to promote innovation in and adoption of clean technologies:⁴⁶

Economic

- Strong manufacturing base
- Key industry clusters
- Strong core technologies
- Strong innovation economy
- Strong export ties

Commercial/Regulatory

- A history of toxics use reduction
- Strong institutional support for environmental technologies and behaviors
- Strong track record in attracting public and private investment
- Supportive regulatory environment

Social/Educational

- Strong public awareness of issues
- High quality college and university research
- A well-educated workforce
- A strong advocacy community

A Pew Charitable Trust report found that in 2007, Massachusetts was one of twelve states with a “large and growing” clean energy economy, in which the number of clean energy jobs exceeded the national average.⁴⁷ From 1998-2007, a decade when overall job growth in the state decreased by 4.4 percent, clean energy jobs – which include jobs in the

⁴⁴ “Massachusetts Clean Energy Center: About Us,” <http://www.masscec.com/index.cfm?pid=10231>.

⁴⁵ *Clean Tech: An Agenda for a Healthy Economy*, 4.

⁴⁶ *Ibid.*, 9-13.

⁴⁷ *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America*, 30.

categories of clean energy, energy efficiency, environmentally friendly production, conservation and pollution mitigation, and training and support – grew by 4.3 percent.⁴⁸

Broken down by category, Massachusetts ranks in the top 10 for employment in four of the five categories:⁴⁹

Clean Energy	Jobs 2007	Energy Efficiency	Jobs 2007	Environmentally Friendly Production	Jobs 2007
California	27,672	California	10,510	California	13,666
Pennsylvania	10,099	Texas	6,353	Minnesota	3,815
Minnesota	4,030	Ohio	5,367	Oregon	3,304
Ohio	3,653	Oregon	4,893	Ohio	2,800
Texas	3,479	New York	3,311	Iowa	2,237
New York	3,421	Wisconsin	2,801	Texas	2,223
Michigan	2,941	Maine	2,560	Nebraska	2,162
Massachusetts	2,890	Massachusetts	2,553	Illinois	1,921
District of Columbia	2,728	Virginia	2,135	Colorado	1,361
Colorado	2,639	Florida	2,071	Arkansas	1,303

Conservation and Pollution Mitigation	Jobs 2007	Training and Support	Jobs 2007
California	64,799	California	8,743
Texas	40,617	New York	3,499
Pennsylvania	24,703	Illinois	3,216
Florida	24,686	Massachusetts	3,155
New York	23,082	District of Columbia	3,130
Ohio	22,296	Texas	2,974
New Jersey	20,060	Florida	2,249
Illinois	19,631	Virginia	1,755
Massachusetts	17,374	Pennsylvania	1,742
Michigan	15,852	North Carolina	1,659

But what exactly defines clean energy and clean technology? In the public and non-profit research realm, two definitions are particularly important to consider. According to the State's Green Jobs Act, the Massachusetts State government defines clean energy as the following:

“Clean energy [shall mean] advanced and applied technologies that significantly reduce or eliminate the use of energy from non-renewable sources, including but not limited to: energy efficiency, demand response, energy conservation and those technologies powered in whole or in part by the sun, wind, water, biomass, alcohol, wood, fuel cells,

⁴⁸ Ibid., 29-30.

⁴⁹ Ibid., 31.

or any renewable or non-depletable or recyclable fuel.”⁵⁰

As the primary, publicly funded entity working on clean technology, the UMass Clean Tech Initiative provides in its “Agenda for a Healthy Economy,” a useful definition of technologies that may be considered clean. These technologies include: renewable energy generation, energy efficiency, water conservation and purification, emissions controls and toxics and pesticide reduction. Although the authors find evidence in Massachusetts of activity related to all of these technologies, they cite five areas, of which clean energy is only one, where they believe the state has the greatest strength and potential:⁵¹

1. *Safer Alternatives*: The design of products and processes that use or create less toxic substances
2. *Green Buildings*: Products and services that reduce the health and environmental impacts of constructing, renovating, and operating building structures
3. *Emerging Materials*: Biobased and nanomaterials that have the potential to yield tremendous environmental benefits through energy and materials use reduction
4. *Clean Energy*: The use of cleaner sources and generation methods of energy production that create less pollution—from fuel extraction to energy generation
5. *Materials Reuse*: Returning products and materials back into the economic mainstream through reuse, remanufacturing, and recycling

Thus far, the State has seen particular progress on the emissions front. On February 5, 2010, Massachusetts Secretary of Energy and Environmental Affairs, Ian Bowles, announced that under current state and federal policies to support renewable energy and energy efficiency, Massachusetts expects to reduce greenhouse gas (GHG) emissions by more than 18 percent below 1990 levels by 2020. This reduction in GHG emissions puts the Commonwealth well on its way to achieving the targeted 10-25 percent below 1990 levels, established in the 2008 Green Communities Act.⁵² Secretary Bowles took the opportunity to reassert Massachusetts’ intended dominance in the green economy: “We have known for some time that Governor Patrick’s emphasis on clean energy is an engine for the

⁵⁰ Truong, *Summary of the Massachusetts Green Jobs Act of 2008*.

⁵¹ *Clean Tech: An Agenda for a Healthy Economy*, 16-27.

⁵² *Patrick-Murray Administration Clean Energy Policies Will Produce Dramatic Reduction in Green* (Governor of Massachusetts, February 5, 2010).

Massachusetts economy – helping energy technology companies grow, creating jobs, and establishing Massachusetts as an industry leader.⁵³

A Model for Green Pathways Out of Poverty?

The renewed attention towards the Gateway Cities, beginning with the MassInc report in 2007, has coincided with the growing legislative interest in Massachusetts' clean energy economy, but the Gateway City-clean tech connection is an important one to make explicit. The notion that "green economic development" can be a powerful engine for growth in older industrial cities is widely shared among academics and practitioners.

Members of the 106th Assembly for older industrial American cities, convened by the Brookings Institute, elaborate on this conclusion:

"Metropolitan areas need to innovate for a new future, cultivate what is working, and reform or eliminate what does not work. Innovation must include an emphasis on the opportunities presented by the emerging green economy and the technological changes required by the need to conserve energy, reduce greenhouse emissions, and create a more sustainable economy and global environment."⁵⁴

In the area of manufacturing, there is a particularly logical connection between the Gateway Cities and green economic development. Even as the sector experiences decline, manufacturing continues as a source of growth in the state, accounting for over one quarter (\$80 billion) of the state's economy.⁵⁵ As the "Agenda for a Healthy Economy" notes, the current Massachusetts manufacturing base has particular strength in precision machining, control of complex processes, production of goods requiring hardware-software integration, and boasts a healthy level of collaboration between research and development.⁵⁶ (Appendix

⁵³ Ibid.

⁵⁴ "Retooling for Growth: Building a 21st Century Economy in America's Older Industrial Areas," (The 106th American Assembly, Hershey, Penn.: The American Assembly, 2007).

⁵⁵ *Clean Tech: An Agenda for a Healthy Economy*, 9.

⁵⁶ Ibid.

3 shows a particular spatial concentration in and around the Gateway Cities of state residents employed in the manufacturing sector.)

In the Merrimack Valley, which lost between 12-13,000 jobs over the last five years due to downsizing at Lucent Technologies alone, there remains a valuable manufacturing skill set among residents that could, in theory, translate to green manufacturing. To Fred Carberry, who retired in April 2010 as Director of the Merrimack Valley Workforce Investment Board and was Director of Lawrence's Department of Planning and Development, this is an important asset:

"Green Jobs, especially in terms of renewable energy, are manufacturing jobs. They're really one in the same ... Putting together solar panels is the same as putting together a lot of electronic circuitry that you would be doing for a defense contract, or an electronics communications company, like at Lucent Technologies. So the resident skills are here. The capacity is here."⁵⁷

At the Clean Energy Workforce Development Forum, convened by UMass Lowell in June 2009, Jim Paull, President of Stellaris, a solar manufacturer in North Billerica, MA, explained his perspective:

"From a manufacturing perspective, there's no such thing as a 'green' job. We still need the same type of talent as regular industry. There are four categories of a manufacturing workforce: general business (accountants, inventory control, purchasing); engineering; technicians; and people who actually make the products. Technicians need to be on sound footing in terms of fundamentals. We will need electronic and mechanical technicians and most of all we need machine operators. Solar will likely be more highly automated and therefore will need more people to operate the machines."⁵⁸

Indeed, the Gateway Cities are logical candidates for the green workforce development grants. In the area of energy efficiency and weatherization, they are likelier to have older building stock than most other places. In the retrofitting process, currently unemployed residents could perform the retrofits of these older buildings, generating local jobs. And as described above, there is also potential for development in the innovation and manufacturing sector.

⁵⁷ Fred Carberry, "Personal Interview," January 14, 2010.

⁵⁸ *Clean Energy Workforce Development Forum - Report* (UMass Lowell, June 2009).

Although the Massachusetts Pathways Out of Poverty Program (“Pathways”), announced in May 2009, did not have a strong manufacturing component (grantees primarily focused on workforce development in solar panel and boiler installation, weatherization, energy auditing and green product sales), the state seemed to embrace the link between Gateway Cities and green economic development when it opted to target the grant program to these cities alone. Administered by the Office of Energy and Environmental Affairs, Pathways sought to support “job training programs directed toward the clean energy industry that move training participants towards financial self-sufficiency” and was designed to support individuals in households with incomes not exceeding 300% of the federal poverty level. Eligible projects included job training provision, certification of relevant education and career coaching. In a press release to mark the opening of the competitive process for the Pathways grants, Secretary Bowles said the following:

“Expanding employment opportunities in the Commonwealth’s clean energy industry is an important goal everywhere, but especially crucial in low-income neighborhoods where resources and opportunities of any kind are scarce. I am happy to announce that the first significant green jobs grants awarded since passage of the Green Jobs Act are going to historically underserved areas of our state. The Patrick Administration’s clean energy goals are not only good for the environment, they are essential to the Massachusetts economy. These grants will go a long way toward ensuring that residents of these five Gateway cities share in the prosperity that is bound to come from growing our clean energy sector.”⁵⁹

The state selected five Gateway cities as target areas for the \$1 million in funds: Lowell, Worcester, Brockton, Springfield/Holyoke, and Pittsfield. Subsequent grants supporting green job creation have also been accessible to the Gateway Cities, including the state’s Clean Energy Workforce Capacity Building grant, the U.S. Department of Energy’s Energy Efficiency and Conservation Block Grant (EECBG), and the Energy Training Partnership Grant, administered by the U.S. Department of Labor.

⁵⁹ *Patrick Administration Announces "Pathways out of Poverty" Green Collar Job Training Grants* (Office of the Governor, May 28, 2009), http://www.mass.gov/?pageID=eoeapressrelease&L=1&L0=Home&sid=Eoea&b=pressrelease&f=090528_pr_pathways&csid=Eoea.

During a visit to Boston in 2008, Van Jones, the former White House Special Adviser for Green Jobs, Enterprise and Innovation, noted, “the Massachusetts model, if it includes green pathways out of poverty, could set the template for other 49 states. Washington State has already got off to a good start, California is trying, but there’s no comprehensive model that includes low-income people and pathways out of poverty.”⁶⁰ Among Gateway City civic leaders there is a sense that the state should be more explicit about the Gateway City-green economic development connection.

“The Gateway Cities are really where [clean energy investment] should land. There’s been a lot of good thinking about that coming out of a lot of different sources. It wouldn’t be hard ... to say, ‘We’re going to do Gateway Cities Clean Energy Investment.’ Period.”⁶¹

In the absence of any comprehensive model for achieving a place-based green economic development in American cities or true pathways out of poverty, analysis of planning for green jobs in Lawrence and Lowell can help to underscore important lessons for the State in its development and administration of clean energy workforce programs.

⁶⁰ Vanessa E. Jones, “Donning a green collar,” *Boston Globe*, July 4, 2008, http://www.boston.com/business/articles/2008/07/04/donning_a_green_collar/.

⁶¹ Maggie Super Church, “Personal Interview,” January 22, 2010.

– Chapter 2 –
Urban Twins:
“We have the River in Common, but it Diverges there”

“Urban Twins”

Lawrence and Lowell are two of the country’s earliest industrial cities, separated by only a few miles of the Merrimack River in northeastern Massachusetts. Their similarities often lead to a one-and-the-same image in the minds of those outside the Merrimack Valley region. Both designed were by and for and the textile industry. Both were one-time powerhouses in the Industrial Revolution. Both were battered by the effects of deindustrialization. Both are now home to large immigrant communities. A 1997 Boston Globe Magazine article introduced them in the following way:

“They’ve been mentioned in the same sentence for 150 years now. Sometimes, they’re uttered in the same breath: Lowell-and-Lawrence, two old textile cities nine miles apart that share a river, a congressman, a Thanksgiving football rivalry, and a boom-and-bust history. It’s easy to think of them as urban twins.”⁶²

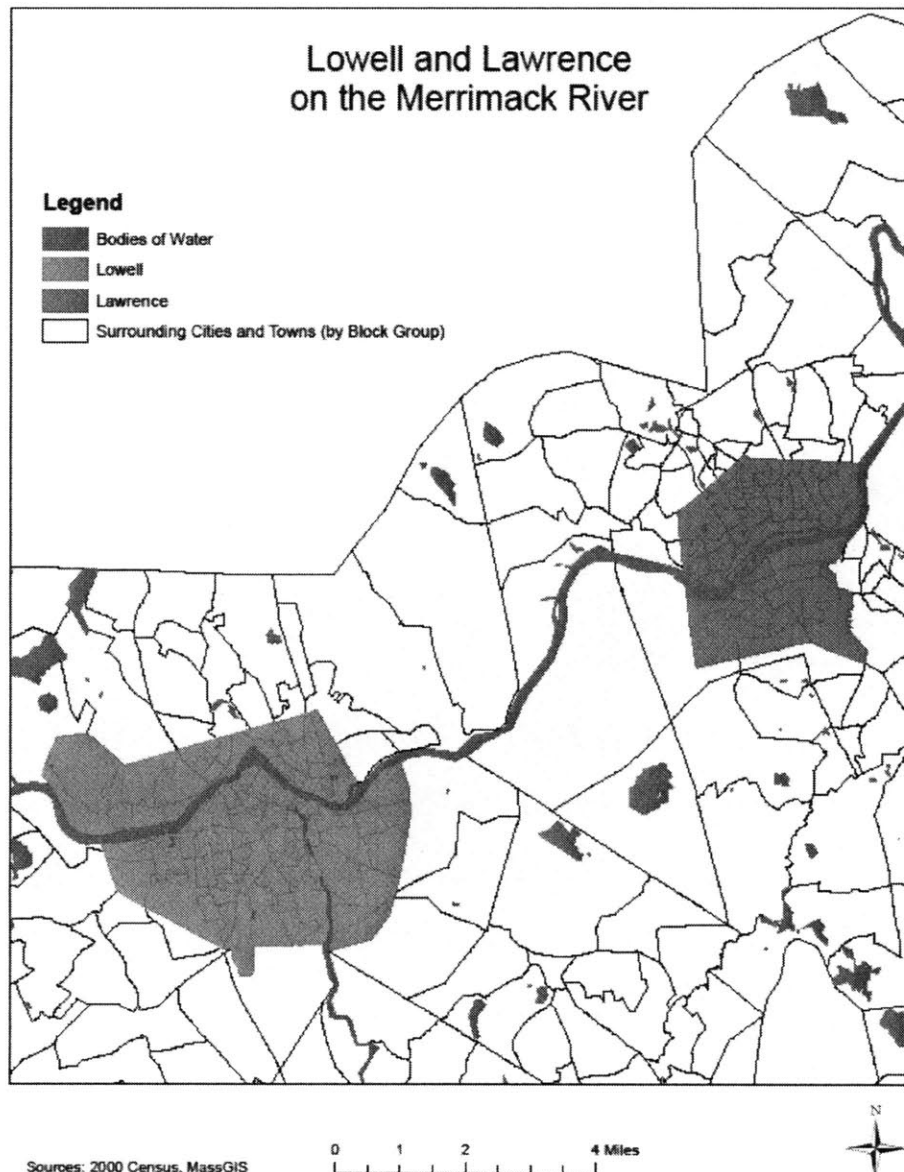
The grouping of the two cities extends beyond that of the “urban twins” characterization. Also referenced by the Lowell Historical Society as “sister cities,”⁶³ Lawrence and Lowell are located in the same Massachusetts Congressional District (5th), overseen by the same regional economic development council (the Merrimack Valley Economic Development Council), and were both designated by HUD as the only Renewal Communities in Massachusetts. The cities however are represented by separate regional planning councils (the Merrimack Valley Planning Council and the Northern Middlesex Council of Governments, respectively), separate Workforce Investment Boards (the Merrimack Valley Workforce Investment Board and the Greater Lowell Workforce Investment Board, respectively) and separate governmental counties (Essex and Middlesex,

⁶² Powers, “Of mills and momentum.”

⁶³ *Lowell: The River City* (Lowell Historical Society, 2005), 129.

respectively).

The map below shows the two cities, carved around the contours of the Merrimack River. Lowell is to west and Lawrence to the east:



At only six square miles, Lawrence is half the size of Lowell, but with a population of 71,234 people, Lawrence is one and a half times denser than Lowell.⁶⁴ According to the 2008 American Community Survey, Lawrence's population is both younger (31.1 percent under

⁶⁴ American Community Survey, 2006-2008.

the age of 18) and poorer than Lowell's. Almost a quarter of Lawrence families (24.8 percent) have an income below the poverty level; the percentage in Lowell (15.5 percent) is high as well, more than half that of the state (7.1 percent). Lowell's largest racial or ethnic group is white (62.5 percent) and the second largest group is Asian (17.9 percent), followed by Latino (15.8 percent). The dominant racial and ethnic group in Lawrence is Latino (70.8 percent), followed by a significantly smaller white population (30.2 percent).

Residents of both Lawrence and Lowell have high rates of employment in manufacturing (22.0 percent and 19.8 percent, respectively) and in educational services, health care and social assistance (20.8 percent and 22.7 percent, respectively). In Lawrence however, 36 percent of people over 25 years of age have less than a high school diploma, compared to 22 percent in Lowell and 12 percent statewide. (Appendix 4 contains a table with more detailed demographic, employment and educational attainment information on the two cities and the state.)

Contrasting Narratives: The Influence of Design on Leadership and Planning Culture

Despite the real and perceived similarities about the cities' populations and economies, Lawrence and Lowell are in fact marked by highly contrasting narratives of post-industrial development. Ask local leaders to compare the cities' trajectories since 1960s deindustrialization and discussions will center on a specific set of assets that have existed in Lowell, but have been absent in Lawrence: In Lowell, there is a population of mixed incomes, political leadership that commands state and federal investment, a multi-sectoral, proactive approach to long-range planning, and an ability to adapt to a sudden influx of newcomers. These assets are not present in Lawrence. "We have the river in common," says McGovern of the two cities, "but it diverges there."⁶⁵

⁶⁵ McGovern, "Personal Interview."

In essence, the difference between planning in the two cities can be characterized as proactive versus reactive. While this framework simplifies what are in fact complex political economies and communities, it helps to illuminate certain qualities that have dominated the respective cities' "planning cultures." By examining phases of development advocated at the state level and each city's ability to plan for development in these areas, as well as the foresight not to invest in seductive but unstable development opportunities, we can see how the two places compare.

As the era of de-industrialization progressed, Lowell has attempted to develop an economy based on the high technology (high tech) computer industry and on the creative economy, defined by the City as "industries that have their origin in individual creativity, skill and talent, and which have a potential for wealth and job creation through the generation of ideas, products and/or services."⁶⁶ Recent mill redevelopment projects have supported investment in the City's downtown, which the City's Director of Economic Development, Theresa Park, explains:

"Lowell has definitely had its ups and downs, but I think that it's still on an upswing. Recently we've benefited from the real estate boom, where we've seen over 200 million dollars worth of private investment, predominantly in the downtown area and in market-rate housing. Many of the old mill buildings have been converted into attractive loft condominiums and apartments that have retained the buildings' historic charm. So a lot of the buildings that had been sitting vacant and dilapidated have been put back into productive use, improving our City's tax base, adding to the vitality of our downtown."⁶⁷

Lowell has met both success (siting of a National Historical Park) and devastating failure (collapse of Wang Laboratories), but maintained robust political infrastructure to support planning and channels to access both public and private capital. Jim Cook, Executive Director of the Lowell Financial and Development Corporation, tracks the city's development efforts since the 1970s:

⁶⁶ Office of Cultural Affairs and Special Events, "Creative Economy, Lowell," *Lowell's Gateway to the Arts and Creative Economy*, <http://www.cultureiscool.org/creative-products-overview>.

⁶⁷ Theresa Park, "Personal Interview," January 13, 2010.

“High tech was the ‘70s and ‘80s. That was a big state push. [In Lowell] we were all about it. Digital, Wang, Sun Microsoft, you can go down the list. The creative economy is a fairly recent push. Within the last couple of years, Lowell’s gone in that direction.”⁶⁸

Cook is careful to note though, that Lowell is not attempting to hang its hat on any one industry or approach to development:

“We don’t see [high tech or creative economy] as the ‘next wave.’ We just see them as another part of our evolution. If we’re going to continue to diversify, then we can’t try to replace one with the other. Wang was good for us, but when they went bankrupt in ‘93, we were screwed. It’s taken a lot of work, but I think we’re stronger now than we were then.”⁶⁹

What is remarkable here is not so much the quality of Lowell’s experience with a boom-and-bust economy, but the fact that it underwent this volatile experience at all, instead of stagnating or experiencing a sense of planning paralysis. And not only did Lowell go through this upheaval, but it also emerged with insight to support future planning.

In Lawrence, long range planning has been virtually non-existent for decades. Bill Traynor, Co-Executive Director of Lawrence CommunityWorks, was born and raised in Lawrence, graduated from the University of Lowell (now the University of Massachusetts Lowell), and taught there for five years while he worked in the city as a community organizer before heading back to Lawrence. He offers his impression of planning in the city:

“I’ve been connected to Lawrence for over 30 years and I’ve never seen a strategy, plan or idea about how you move Lawrence into the next century. There’s been no plan with connection to reasonable ideas about economic development or urban planning. This is over a 30-year period when it’s been clear that cities like Lawrence have to reinvent themselves.”⁷⁰

Since large-scale manufacturing left the city, administrations have found themselves ill equipped to spark, or capitalize, the city’s revitalization. Poor public leadership has challenged, and in some cases derailed, community and economic development efforts. Unlike Lowell, decades passed without the presence of any strong public or private sector

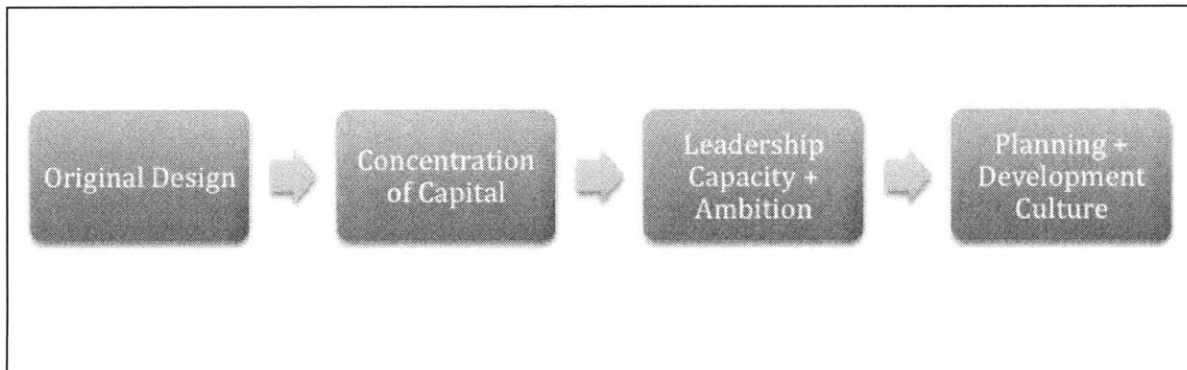
⁶⁸ Jim Cook, “Personal Interview,” January 20, 2010.

⁶⁹ Ibid.

⁷⁰ William J. Traynor, “Personal Interview,” January 20, 2010.

institutions committed to a long-term planning strategy for the city. The combination, however, of Lawrence CommunityWorks, now a ten-year-old, high capacity community development corporation in the city, and the recent election of a politically skilled Mayor, could potentially mark the opening of new chapter in the city's planning history.

These differences between Lowell and Lawrence are not accidental, but can arguably be traced back to the original plans for each community, wherein the design of Lowell permitted a greater accumulation of wealth within the city limits than it did in Lawrence, which was designed primarily for mills, worker housing and a commercial district to serve surrounding communities. I would argue that it was the provision for a small concentration of wealth to exist in Lowell but not Lawrence that led the cities to take such divergent paths in terms of leadership, planning and development. The influence of design on planning and development culture was illustrated in the Introduction and is repeated here:



I hypothesize that in a state where planning is an historically local, not regional, process, the original physical designs have had the power to exert such influence.

Original Design

Lowell and Lawrence were both constructed by textile manufacturing companies to harness the power of the Merrimack River, incorporating in 1826 and 1847, respectively. Second only to Paterson, New Jersey among the country's first planned industrial cities,

Lowell quickly emerged as the hub for New England textile production.⁷¹ Former State Senator Patricia McGovern, who hails from Lawrence and represented it in the Massachusetts State Legislature from 1981-1993, and who became the first woman to chair the Massachusetts Senate Ways and Means Committee, describes the creation of Lowell in the following way:

“Lowell was a planned city. They really put a lot of thought into what it was going to be: All these farm girls would come down from New Hampshire and parts of Massachusetts and Vermont and work in this urban area. The mills would be good places to work and the women would have boarding houses in which to live and eat. They would be respectable ladies. And when they built the city, they took a chunk of land - Lowell's big, it's not a small place - and they did all this experimental work around labor and manufacturing.”⁷²

Lowell was, in effect, a social experiment, named for Francis Cabot Lowell, the originator of the prototypical American factory. As historians recount, Lowell was a young Yankee entrepreneur when he travelled to Lancashire, England, memorized the design of the British power loom and recreated it in the United States, giving rise to the first American textile mill in 1814 in Waltham, Massachusetts. Determined not to replicate the degradation and squalor he perceived among English factory workers, Lowell envisioned a labor force of docile (read: easily controlled) young women who would work no more than four or five years in the factories and live under the watchful eye of a housemother. Lowell died only three years after the creation of Waltham, so fellow entrepreneurs chose to name Waltham's successor city in his honor.⁷³

The first twenty years of the paternalistic “Lowell Experiment,” 1826 – 1846, strongly influenced the subsequent plan for its sister mill city. Despite the financial and perceived moral success of Lowell, the plan for Lawrence included critical changes, specifically the prioritizing of profit. As Jeanne Schinto writes in her history of the city,

⁷¹ Ross J. Gittell, *Renewing Cities* (Princeton, N.J.: Princeton University Press, 1992), 9.

⁷² McGovern, “Personal Interview.”

⁷³ Jeanne Schinto, *Huddle Fever: Living in the Immigrant City* (New York: Knopf, 1995), 75-77.

“Lawrence was strictly a money-making venture with no noblesse [oblige] about it.”⁷⁴ In 1845, a group of about twelve men from some of New England’s most elite families gathered to pool a total of \$1 million for a proposed real estate venture. They named themselves the Essex Company and named Abbot Lawrence their President, creating one of the first corporations in the U.S. and as Schinto notes, “one that never for a moment intended to spend its profits in the city those profits were made.”⁷⁵

Having quietly purchased adjoining plots of land, totaling 2,300 acres, since the 1830s, the Essex Company carved out three and half square miles from the town of Methuen and two and half square miles from neighboring Andover (which included North Andover at the time), creating the City of Lawrence.⁷⁶ Damming the Merrimack River, as had been done to power the Lowell mills, developers created the Great Stone Dam, a feat of engineering for its time. The emphasis on productivity and profit is inherent in the design of the place: Compared to Lowell’s mills, the Lawrence mills are larger in size; Lawrence’s Wood Mill, for example, located just north of the Merrimack River is almost one-third of a mile long, a length roughly equivalent to the height of the Empire State Building.⁷⁷ There are also more of them– at the time of Lawrence’s inception, it was already home to eleven mills, compared with only two that initiated Lowell’s industrial rise. The mills in Lawrence also have smaller spaces that separate them.⁷⁸ McGovern’s dry description of the plan for Lawrence captures the clear profit extraction motive that informed the city’s founding:

“By the time they got to Lawrence, they said, 'Let's just build the mills.' They were far less interested in social experimentation. They took a piece of Methuen and a piece of Andover. They took six square miles, which is small. There's no land. And they said, 'You're Lawrence.'”⁷⁹

⁷⁴ Ibid., 78.

⁷⁵ Ibid., 74.

⁷⁶ Just two years later, a similar company formed to develop part of the town of West Springfield, in the western part of the state, as the town of Holyoke

⁷⁷ The Empire State Building is 1,250 feet tall.

⁷⁸ Schinto, *Huddle Fever: Living in the Immigrant City*, 79.

⁷⁹ McGovern, “Personal Interview.”

Thus, the second of the urban twins came into existence, untethered to the paternalistic, mixed income vision of industrial society that had guided the creation of the first. In a sense, it was the orphaned twin.

Indeed, the city itself was designed to be as much of a machine as the mill equipment that, in the early part of the 20th century, churned out the world's largest supply of woolen and worsted fabrics. Less a city and more an industrial creation, Lawrence was principally owned by one company, had one group of investors, and one planning and development arm – the Essex Company. Bill Traynor underscores Lawrence's function as a machine and its ownership by a single company:

“In many ways, Lawrence is much more like one of these mining towns in the West. It's like a company town, created to extract ore from one mountain, but in this case to extract power from one river.”⁸⁰

This design would have long-lasting implications for the city's economic viability, as described by Fred Carberry, of the Workforce Investment Board (WIB):

“The City of Lawrence that was designed to be very compact for a reason: To allow tens of thousands of workers to make their way back and forth to the mills on foot. And now we're in a different age and that compact design is now our limiting factor.”⁸¹

Concentration of Capital

The respective plans for Lawrence and Lowell significantly influenced the formation of neighborhoods of affluence (or lack of formation in the Lawrence case). McGovern explains the emergence of a middle class in Lowell, and the absence of one in Lawrence:

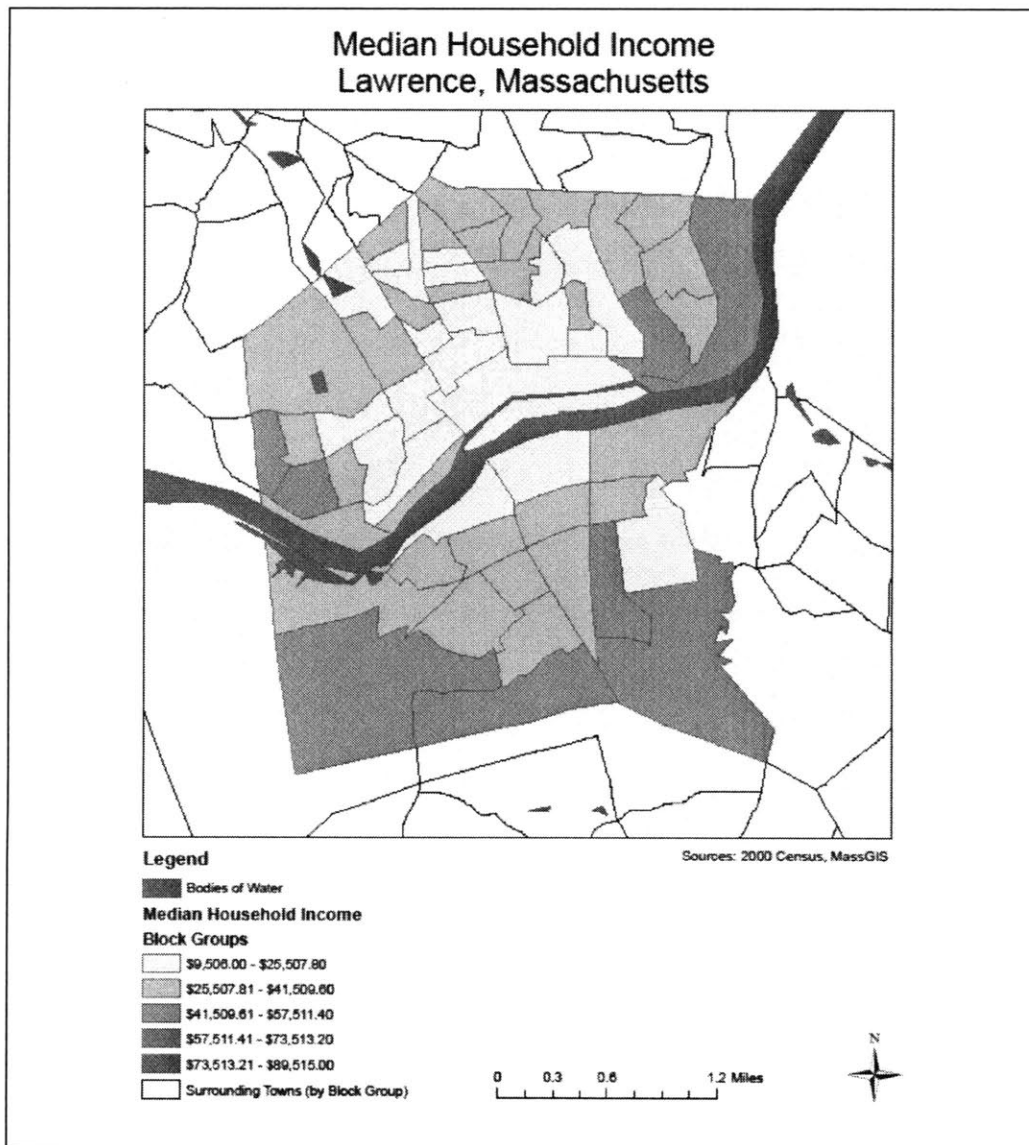
“In Lowell, even if the center began to deteriorate, they could keep a middle class, which matters. In Lawrence, there are very few outlying areas to keep a middle class, so when the city started to decline, the middle class just left. In terms of socioeconomics, keeping a diverse group within the city was too hard. It was too small.”⁸²

⁸⁰ Traynor, “Personal Interview.”

⁸¹ Carberry, “Personal Interview.”

⁸² McGovern, “Personal Interview.”

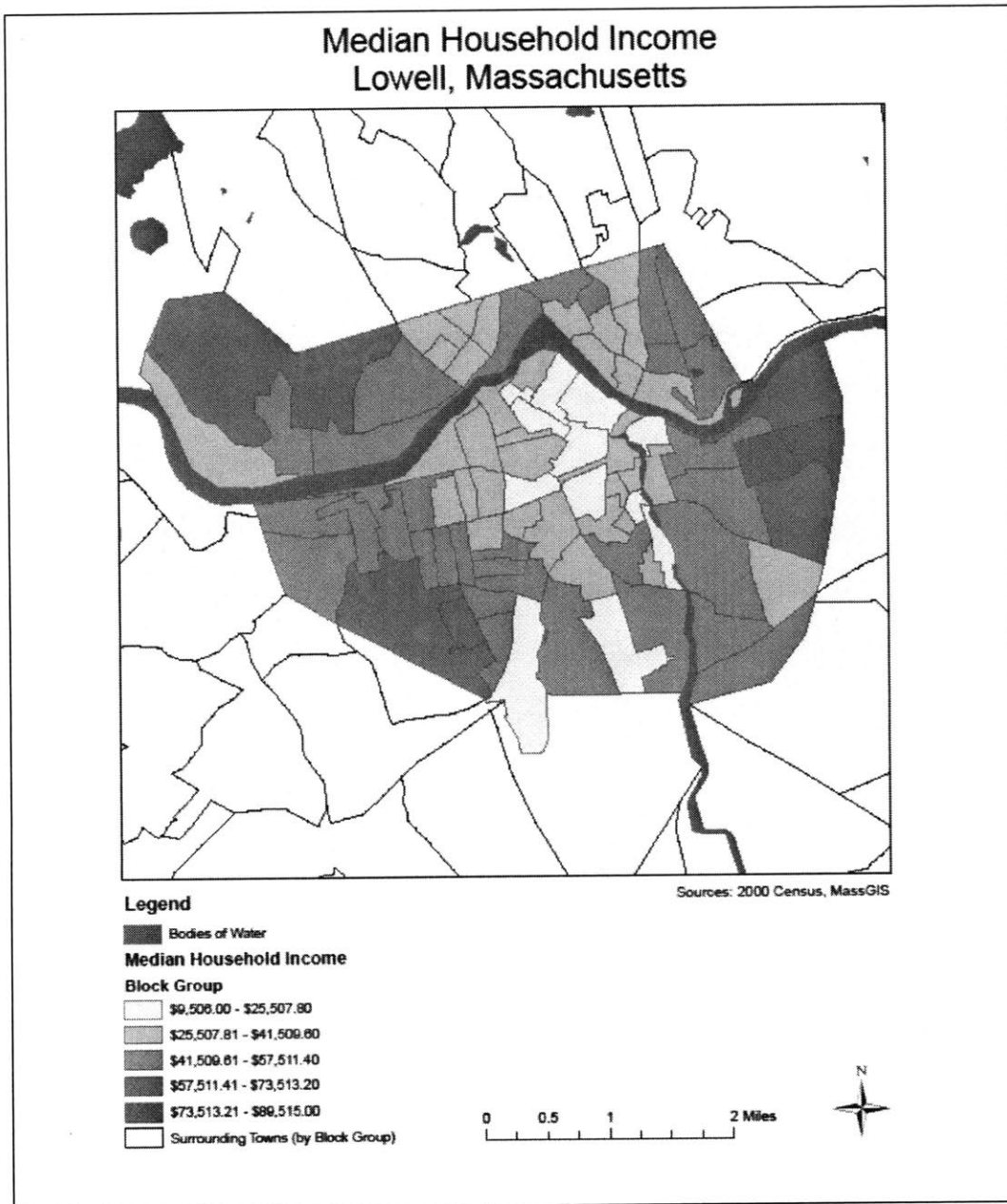
The lack of socioeconomic diversity in Lawrence, relative to Lowell, persists today. While median household income in Lowell (50,944 dollars) is roughly 75 percent of median income across the state (64,684 dollars), the number in Lawrence (32,007 dollars) is less than half that in the rest of the state. As shown in the following map, Lawrence has maintained small pockets of middle class wage earners in the Prospect Hill, Tower Hill and Mount Vernon neighborhoods.



But the overall Lawrence tax base has always remained low, Traynor explains, and the City has struggled to generate revenue:

“Because Lawrence was so small, the tax base in the City has never been able to support the full cost of the place or anything near the full cost of the place. So its deal with the devil has been to rely on the State.”

Lowell, however, maintained an organized elite, concentrated largely in the Belvidere neighborhood, shown in the following map. This elite would go on to drive the city's efforts at reinvention and revitalization.



As Bill Traynor explains, Lowell simply had a lot more “raw material” with which to work when manufacturing moved south:

“Even though some of the major industrial manufacturers left, Lowell had its own ruling elite that was intact. There wasn’t an “Owner” that left and left everything. There were still bankers; there were people engaging in the University. You had a cultural identity to some extent. Just by virtue of having a university there and having that kind of state and federal investment come, Lowell had a lot more to work with.”⁸³

Leadership Capacity and Ambition

The Mogan/Tsongas Nexus

“The Mogan/Tsongas nexus is an important factor in terms of leadership compared to what has happened down the river in Lawrence ... Whether it was an accident of history or just Lowell’s natural capacity to produce leaders, Mogan and Tsongas were really the critical factors in determining Lowell going down one path as opposed to where Lawrence has found itself.”⁸⁴

The expression of individual leadership has played a decisive role in determining the paths of Lawrence and Lowell. Paul Marion, a Lowell native, published poet and now Executive Director of Community and Cultural Affairs at the UMass Lowell, has made his life’s work the study of the Lowell’s history and its evolution as a cultural hub. He is, in many ways, the city’s resident storyteller. While many people, both in and out of the Lowell, will cite U.S. Senator Paul Tsongas as the City’s instrumental leader, Marion is careful to emphasize the visionary work of a man named Patrick Mogan, who moved to Lowell from the town of Norwood when he married into a political family in the city.

Mogan began his career in Lowell as a reading teacher, and went on to become a school principal and later the Superintendent of Schools. Along the way, says Marion, he became a community organizer and the city’s unofficial Long Range Planner.

“Mogan was all about grassroots empowerment. He was a terrific organizer. He was charismatic and even though he not a very imposing person when you met him, he had

⁸³ Traynor, “Personal Interview.”

⁸⁴ Paul Marion, “Personal Interview,” January 17, 2010.

an intellectual integrity and expansiveness that was inspiring. It drew people to him and his vision.”⁸⁵

This vision was one of Lowell as a self-sustaining place, one with the capacity to reinvent itself, one with a rich history upon which it might leverage economic and social benefit. Mogan argued that converting the city’s physical and cultural assets into economic assets would help to stabilize its volatile and declining economy. His vision would give rise to the establishment of the Lowell National Historical Park in 1978, showcasing the city’s mills and industrial heritage, and a diversified plan for the city’s economy. Marion explains:

“He would say that we need to invest in the things that can’t be taken away from us, that the lesson of Lowell should be, Don’t wait for the next corporation to come in and the next hot industry, whether it is textiles, shoes, or electronics. These are going to come and go and if you want to beat the boom-and-bust cycle, you’ve got to create a stable economic base. He talked about the state forest, the rivers, the architecture and the social history. The National Park became one manifestation of that larger philosophy. He set in motion an epochal transformation of the city.”⁸⁶

Mogan was also resourceful in seeking partnerships with academic institutions, enlisting schools like MIT and Harvard Graduate School of Design in work with the City. In doing so, he brought in outside validation, which, as Marion notes, was important for a place like Lowell.

In many ways, Mogan’s motivation to build an affirmative identity for the city came from his experience in the classroom, where as teacher, he saw students fail because, in his view, they had poor self image and few positive reinforcements:

“He believed that if kids [left school] and all the messages they got were that being an ethnic person, a person from a working-class city, or a person from a burnt-out industrial town are all bad things, then these are going to darken the self-image of these kids. They will probably not wind up with a strong appetite or deep desire to strive to succeed in life. By making Lowell a National Park, which would put it on the same list as the Grand Canyon and Statue of Liberty, [Mogan wanted to give] the city an injection of dignity, really an reaffirmation of its inherent historical value as an important American place and piece of the nation's story. The young people with family roots in the city's

⁸⁵ Ibid.

⁸⁶ Ibid.

history would more likely see themselves as part of a community with a meaningful past and prospects for a better future.”⁸⁷

The city as a whole, and not just the schools, he believed, should communicate a message of value and worth to young residents.

Paul Tsongas, a Lowell native and son of a Greek immigrant (himself a graduate of Harvard College), provided, without question, the ultimate complement to Mogan’s vision for Lowell’s transformation. A graduate of Dartmouth College and Yale Law School, Tsongas became a Lowell City Councilor in 1969, went on to serve as Middlesex County Commissioner and then, beginning in 1974, served two terms in the U.S. House of Representatives, representing Massachusetts’ 5th Congressional District. In 1978, he defeated a Republican incumbent to win a seat in the U.S. Senate, which he held until 1984, when he retired due to illness. Tsongas re-entered the national political scene in 1992, with an unsuccessful bid for the Democratic Presidential nomination. He succumbed to the non-Hodgkin’s lymphoma in 1997. (In 2007, his widow, Niki Tsongas, ran for and won the U.S. Representatives seat that he once occupied. She continues to hold this office.)

Marion, who worked in the city under Mogan and Tsongas, recalls a period of about 15 years when the two men were maturing in their political leadership and influence:

“[Mogan and Tsongas] were allies, but not friends. Pat had a more radical vision for how Lowell’s economy should develop. I think he saw Paul as having a more conventional vision looking for the next company to bring in, where Pat wanted to empower the local community more.”⁸⁸

Despite their differences, Tsongas successfully secured state and federal money to support Mogan’s vision of economic development, guided, at least in part, by culture, history and education. In addition to negotiating federal legislation for the National Historical Park,

⁸⁷ Ibid.

⁸⁸ Ibid.

Tsongas played a key role in achieving designation for the University of Lowell to become a campus in the University of Massachusetts system.⁸⁹

“Even with Pat McGovern, Lawrence has struggled”

It is important to note the important role that Pat McGovern played as the State Senator representing Lawrence and as the first female chair of the powerful Massachusetts Senate Committee on Ways and Means. But as Marion says, “Even with Pat McGovern, Lawrence has struggled.”⁹⁰ Although not equivalent in status to that of a U.S. Senator, McGovern’s position could theoretically have been more powerful than that of U.S. Senator in its ability to secure resources for her hometown. But the fact that McGovern brought a State Park to Lawrence (Lawrence Heritage State Park), while Tsongas’ reach enabled him to secure funds for a National Park, testifies to the true power that Tsongas’ representation provided.

There are indeed strong civic leaders in Lawrence, such as Isabel Melendez, who moved to Lawrence from Puerto Rico in 1959. Since 1973, Melendez has worked as Spanish Program Director with the Greater Lawrence Community Action Council and is hailed for bringing the voice of the Latino immigrant community into the city’s official political realm. In 2001, she ran a nearly successful bid to become the first Latino/a mayor of the city, capturing 46 percent of the vote and narrowly losing to Michael Sullivan, brother of a former mayor. She is also a founder of the local *Semana Hispana* (Hispanic Week) festival and broadcasts a daily radio program, *La Voz del Pueblo* (the Voice of the People).⁹¹ Over the last few years, Bill Traynor, has also recently begun to receive recognition inside

⁸⁹ Frederick Sperounis, “Personal Interview,” February 1, 2010. Sperounis is former Executive Vice-Chancellor of UMass Lowell. (He is also my father.)

⁹⁰ Marion, “Personal Interview.”

⁹¹ “She’s a bridge between two communities,” *Eagle Tribune*, August 30, 1999, http://www.glcac.org/News_and_Events/News/isabel.htm.

and outside the city for promoting a vision of equity, robust participation and “gentrification from within.”⁹²

But in the vacuum created by industry’s departure, a patronage system in local government emerged in Lawrence, preventing the recruitment of talented outside urban practitioners. As a result, Lawrence planning and politics have been reactive and reactionary, and included attempts in the 1980s by the predominantly Irish city officials to keep out a growing Latino population through the exclusion of affordable housing. Traynor describes that time and the absence of a call for progressive alternatives:

“The Mayor in the early ‘80s ran on the platform that they were not going to take any more public money. Their prospective was that the public money was forcing them to build affordable housing and other things they didn’t want to do. With all these negative politics going on, there was no one group of people saying, ‘Hey, wait a second, there’s a path and we need to stay on this path in the long term,’ and no idea what that path is.”⁹³

In fact, in the Lawrence story, there are no figures who have promoted a vision for the place, or been able to pair such a vision with public resources, in the way that Mogan and Tsongas were able to in Lowell. It is impossible to say with any certainty, however, why strong leadership and an emphasis on visioning and long-term planning emerged in Lowell and not in Lawrence. Perhaps it has been, as Marion says, an accident of history, attributable to the larger size of Lowell’s population. Another hypothesis is that leadership grew from the middle class community that stayed in Lowell when the textile industry collapsed, and a political elite that emerged from some of these families. Whatever the origins of the leadership, the history and legacy of vision and implementation that Mogan and Tsongas exemplify in Lowell’s story are strikingly absent in the story of Lawrence.⁹⁴

⁹² Lorlene Hoyt, “Are you an activist scholar? You are not alone.,” *CoLab Radio*, April 5, 2010, <http://colabradio.mit.edu/?tag=lawrence-practicum>.

⁹³ Traynor, “Personal Interview.”

⁹⁴ Since 1895, of the eleven individuals who have served in the U.S. House of Representatives representing Massachusetts’ 5th congressional district, seven have been residents of Lowell, but only two have come from Lawrence.

Planning and Development Culture

“You come to Lawrence and there is no real plan”

The consensus among interviewees – from Traynor at the local level, to Carberry at a regional view and McGovern operating at the State – is that planning in Lawrence over the last several decades has been reactive rather than proactive. Carberry connects this absence of planning to a particular community psychology, similar to “the belief that they are somehow less than,” noted by Senator McGovern:

“You come to Lawrence and there is no real plan. If somebody wanted to come in and set up shop, they’d say ‘Yeah. We’ll take whomever. All comers are welcome.’ I think a lot of it has to do with the City’s self image. People fall over backwards to attract any kind of company. There needs to be a level of self-respect for the community.”⁹⁵

Although the Merrimack Valley Planning Commission leads regional planning efforts that include and affect Lawrence, there are few incentives or requirements in Massachusetts for a city government to engage in either short or long term planning in partnership with other municipalities. Carberry questions the value of the Merrimack Valley regional planning process, in the absence of stronger mechanisms for city accountability: “There was no real strong push or requirement for individual municipalities to be part of the planning process. So how strong can that kind of plan be?”⁹⁶ The City’s limited planning capacity has taken a tremendous toll on its ability to develop. Without a prepared workforce or attractive physical infrastructure, it struggles to appeal to businesses.

For Traynor, this planning deficit has impeded the city’s ability to move forward. He explains: “Unless you have the infrastructure for a sustained approach over 10 to 12 years, even 5 years – it could be around energy, infrastructure, workforce development – it’s really hard to be ready to get from Point A to Point B.”⁹⁷ As an example of the city’s relative dysfunction, he cites the city’s experience with Boston-based Emerson College, which, in the

⁹⁵ Carberry, “Personal Interview.”

⁹⁶ Ibid.

⁹⁷ Traynor, “Personal Interview.”

late 1980s, contemplated a move to Lawrence. After five years of debate, including an eminent domain legal battle between the city and private landowners, the cost of construction of the new campus in Lawrence had increased while Boston property values dropped. The college chose to stay in Boston.

“What happened in Lawrence is that none of the people with major economic stakes, lived in the City to begin with. And then, when there was no reason to be there or invest there, because the businesses were gone, the only value we had left was the public jobs. That was it. There was nothing to create and hold a political alliance. And so major opportunities like Emerson College came and went.”⁹⁸

“We got to turn this around”

Traynor recalls his exposure in the 1980s to the political environment in Lowell, when he began working as community organizer there:

“I stepped into Lowell in the early ‘80s as a community organizer. And what I saw at that moment in time was a ruling elite that had a vision for the City. It was very powerful, with a U.S. Senator in place, with a chancellor of the university in place, with a newspaper that was firmly behind the strategy for revitalization; a newspaper that was focused on Lowell. It had skin in the game and its economic model was still very Lowell-based. We had major banks owned by bankers who lived in the City or run by bankers who lived in the City. So it was a very powerful regime of people that had a vision for Lowell and had, to some extent, the means to move that vision forward. And they were well organized – that’s not a given anywhere that they were well organized, but they were. So in Lowell, your touch point was whether or not you were with or against the regime. You had people fucking up all over the place. You had all that. But basically, when the time came to vote on shit to move things forward, it happened.”⁹⁹

What Traynor sensed was the presence of an organized political system anchored by a set of local planning, development and educational institutions.

Perhaps the single largest institutional variable that distinguishes Lowell’s culture of planning from Lawrence’s is the Lowell Plan. Along with its community finance arm, the Lowell Financial and Development Corporation, the Lowell Plan has guided the city’s future for nearly three decades. Today, the Lowell Plan counts 34 board members, including the City Manager, Mayor, the Assistant City Manager for Planning and Development, the

⁹⁸ Ibid.

⁹⁹ Ibid.

Superintendent of Schools, the Chairs from the University, the President of the Community College, and the publisher of the local newspaper, the Lowell Sun. Paul Marion explains group's overall value:

"They're not perfect and the Lowell plan has its critics, but it's been an incredibly effective community tool. Even if they had done nothing else in the past 30 years, every month for 30 years they've brought influential people in the community around the same table for a continuing dialogue about the city. Paul [Tsongas] would say, "the Lowell Plan is a Chamber of Commerce that works."¹⁰⁰

The Lowell Plan funds plans for the city, but does not take public money so as to not present any conflicts of interest with City Hall.¹⁰¹ As a result, it is able to institutionalize the public-private partnership that many cite in explaining Lowell's success.

As the companion organization to the Lowell Plan, the Lowell Financial and Development Corporation (LFDC) has provided capital to finance a vision for a revitalized Lowell. Jim Cook, who oversees both groups, explains the origin of LFDC:

"Lowell was in real bad shape in the mid '70s. At the time Paul Tsongas was in Congress. No bank wanted to lend money. Builders were in tax title foreclosure. It was very unofficial, but the banks had [essentially] redlined [the city]. It became not a place to make good loans. So Paul Tsongas and another banker called George Duncan, got together and thought, 'we got to turn this around.'"¹⁰²

The idea that Tsongas and Duncan put in motion was the creation of a common fund that pooled resources from nine banks in the city. Guided by the vision of the Lowell Plan, they established a fund, which they named the Lowell Development and Financial Corporation (LFDC), in 1975 to support economic revitalization. Drawing on seed funding from a consortium of nine local banks, they established a revolving loan fund to provide secondary financing for the rehabilitation of buildings in the downtown. In effect, Tsongas and Duncan created an institutional and financial basis to support a long-range planning practice.

¹⁰⁰ Marion, "Personal Interview."

¹⁰¹ Cook, "Personal Interview."

¹⁰² Ibid.

Three years later, in the summer of 1978, the City received a \$5 million Urban Development Action Grant (UDAG) for job creation. Originally intended as a gift to Wang Laboratories to move their headquarters to the City into a planned corporate tower, the city negotiated to provide the money as a loan at 3 percent interest, to be managed as a revolving loan fund by LFDC. (The interest rate at the time was 16 percent.) In effect, the deal allowed LFDC, which at the time depended on the banks' resources to create a development fund, not to depend on bank contributions.¹⁰³

The UDAG money also gave the fund the flexibility to incentivize certain development opportunities and respond to specific problems. By lending money out at 40 percent of the prime interest rate, the fund has been able to appeal to a range of clients over time and maintain a self-replenishing revolving loan structure. Today, LFDC counts participation from nine local banks. With each bank owning only one ninth of any loan, risk is minimized, and banks are able to satisfy requirements under the Community Reinvestment Act.¹⁰⁴

Cook describes the flexibility that's been so important to the fund: "Because we're [tax exempt], we can be selective. We've turned down loans for projects that the city just didn't think were good, compatible projects for the city."¹⁰⁵ The focus of the fund changes every year. Currently, it is involved in a 14 million dollar affordable housing deal, constructing 180 units of housing, and has created the Downtown Venture Fund as a pool to fund small startup retailers. Thus far, they've provided resources to 31 businesses from this fund.¹⁰⁶

To the best of his knowledge, Cook does not know of any community-based lending institutions that rely on the same bank consortium model as LFDC. But why would an

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

institution like LFDC locate in Lowell and not Lawrence? Perhaps it was the simple fact that Lowell was Tsongas' base, or perhaps the Lawrence voter base was not large enough to warrant more attention. Jim Cook attributes LFDC's existence in Lowell to a combination of timing, Tsongas' influence over local banks and the banks own self-interest:

“So much is dependent on the timing. At the time, Paul was in Congress on the banking committee and there were already a good number of banks in Lowell. Because they were Lowell-controlled banks you could get the presidents around the table. I think the banks also felt that it made sense for them to protect their own interests and property values in the downtown.”¹⁰⁷

Cook points out however that a very particular set of local conditions prevented an organization like the Lowell Plan from taking root in Lawrence:

“Lawrence came in about fifteen years ago and said they wanted to do the same thing, so they created the ‘Lawrence Strategy.’ But they omitted all the public officials on the Board, so you didn’t have a public-private partnership, you had a private-private partnership.”¹⁰⁸

As Cook recalls, the one-sidedness of the Lawrence Strategy exacerbated the division between public and private entities in the city: “It actually split the community even further.”

In effect, Lawrence's original physical and social design led to a pattern of economic disinvestment and a deficit of municipal planning capacity that rendered city officials unable to organize stakeholders and leverage funds on par with their counterparts in Lowell. This deficit continues today and Lawrence experiences a distinct disadvantage when it competes with Lowell for green economic development funds.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

– Chapter 3 – Lawrence and Lowell: A Green Workforce Development Case Study

When Green Development is a Zero Sum Game

In December 2008, a small group of individuals convened in Lawrence to discuss green job creation in the city. Attendees at the meeting included representatives from the Merrimack Valley Planning Commission, the City's Community Development Department, the Merrimack Valley Economic Development Council, the International Union of Painters, Northern Essex Community College, MIT's Department of Urban Studies and Planning, Veritas Bank (a locally owned savings bank), Lawrence CommunityWorks, Groundwork Lawrence (a local environmental planning non-profit), and YouthBuild. Early in the meeting, the group agreed that although green jobs present a unique opportunity for Lawrence in their potential scale and community benefits, green workforce development might not necessarily be that different from previous workforce development needs. Group members also agreed though that they would need to conduct further analysis of the workforce needs associated with green businesses and develop a clearer vision for green jobs in Lawrence's future development. A challenge they noted would be cataloging the green sector because of the perceived ambiguity of green activity. The group agreed to refer to itself as the Lawrence Green Jobs Working Group.¹⁰⁹

About a year later, I asked Bob Halpin, President and CEO of the Merrimack Valley Economic Development Council (MVEDC) from February 2000 until May 2010, if he had come to observe any new or distinct challenges associated with green job creation. Having worked in the region for decades, he offered the following impression:

“I'm not sure that the challenge in cultivating green employment in Lawrence is any different than any other sector. When it comes down to workforce, I think that getting a

¹⁰⁹ “Lawrence Green Jobs Initiative Launch Meeting - Minutes,” December 4, 2010.

green job is the same as getting any job. Most of the skills – the hard skills and the soft skills, like language and culture and so forth – they’re the same.”¹¹⁰

If cultivating green employment is not necessarily different than cultivating employment in other sectors, the implication would be a positive one for a city that had enjoyed a good degree of success in economic and workforce development in recent years. But Lawrence has not. To Lawrence, it sends a cautionary message: green jobs, per se, are not a silver bullet for a struggling community. Workforce development programs for the green economy will need to adopt new approaches in the city to help it overcome the historic challenges to economic development that it has faced in its modern history.

Among the businesses that locate in the Merrimack Valley, Fred Carberry cites those in the food service industry, such as Bagel Boy and Cedar’s Foods, which come seeking low and unskilled labor. Although these jobs can be long-term for employees, Carberry has concerns about the quality of a person’s ability to support a family based on wages: “If the primary income producer in the family has a job working in one of these food service businesses, that family is probably still collecting food stamps and other social supports.”¹¹¹ The current economic crisis has also shifted employer demands, compounding the historic absence of opportunities for career ladder jobs for many Lawrence workers. In July 2007, USA Today reported on the specific impact of the economic crisis in Lawrence:

“[In the last decade] many workers with limited skills, including newly arrived immigrants, were able to find work courtesy of temporary agencies or “labor-leasing” bureaus ... [But now], as the economy undergoes a wrenching post-bubble transformation, demand for workers is falling in sectors where many Lawrence workers can participate and shifting to industries where they’re overmatched ... The problem for Lawrence’s swelling ranks of jobless men and women is that the new jobs being created are a poor fit with what they can offer.”¹¹²

Indeed, the most pressing issue before economic and workforce planners – at the federal, state, regional and local levels – is how to achieve a match between labor supply and

¹¹⁰ Bob Halpin, “Personal Interview,” January 15, 2010.

¹¹¹ Carberry, “Personal Interview.”

¹¹² Lynch, “Slow labor market takes toll on Lawrence, Mass..”

demand in the communities most affected by the crisis and how to ensure that jobs created serve as opportunities for advancement in employment. As the Lowell-Lawrence case illuminates, local planning culture, rooted in the history of a place, is an important, but often overlooked factor that can significantly affect efforts at implementation.

The Green Jobs Planning Process – Lowell

In 2002, staff at the UMass Lowell Center for Work, Family and Environment led a sustainability scenario planning workshop for the City of Lowell, drawing on a model developed by the Danish Board of Technology to facilitate municipal level sustainability planning in European cities. About 60 people attended that workshop, including Adam Baacke, then a Neighborhood Planner for the City of Lowell. A series of visions and action plans came out of the planning, which resulted in a chapter on sustainability in the City's Master Plan. However, David Turcotte, Senior Program Manager with the Center for Work, Family and Environment, notes that the language of that chapter was vague as to how the City might implement some of the recommendations and employ residents in the process.¹¹³

Turcotte brought an important workforce development perspective to the city's sustainability planning, having run an employment and training program at a local Latino social service agency and worked in the City's Unemployment and Training Office. He recalls the process by which he made the decision to pursue a specific green building agenda to drive the city's overall sustainability plan:

"There were concerns about whether or not we had the workforce with the skills to sustain a clean energy agenda. Coming from a workforce development background years ago, my analysis was, 'Well most of the jobs in clean energy are connected to buildings in some way.' ... If we wanted to really put policy and incentives in place, then we're going to have to drive more green building development."¹¹⁴

¹¹³ David Turcotte, "Personal Interview," January 19, 2010.

¹¹⁴ Ibid.

Turcotte worked with Baacke, a local architect named Jay Mason, and a community advisory committee to convene a Green Building Forum in 2006. Their efforts resulted in the appointment of a city manager-appointed Green Building Commission to advise City Hall on such matters. The Commission is dedicated to promotion and advocacy of green design, construction and development practices in the City “through research, identification, and implementation of policies, programs, and education that will increase the sustainability and reduce the environmental impacts of building activity.”¹¹⁵ Among its activities, the Commission works with UMass Lowell and Middlesex Community College to develop education and outreach programs related to clean energy fields such as waste reduction, recycling, building materials and techniques, energy efficiency, air quality, site and building design. Turcotte says, “One of our priority areas within the Commission is empowering green jobs, even though most of our business focuses more on the building side.”¹¹⁶ Current members of the Commission represent a major local bank, the Lowell Planning Board, UMass Lowell’s Toxic Use Reduction Institute and Center for Family, Work, & Community, Northeastern University, Harvard University and local companies involved in construction, plumbing, architecture, real estate, biotech, and sustainable business planning.

City Leadership

The Lowell case highlights the importance of having leadership that takes seriously the possibility of green development. Turcotte explains,

“Since we established the Commission, Adam has become Director of the city’s Division of Planning and Development and Assistant City Manager. The City has embraced [green] because of him, because of the City Manager’s interest, and because of this whole process with my involvement and others. The director of the Economic Development Office is also into green. And we had some high profile people who want to be on the

¹¹⁵ “Green Building Commission -- Lowell, MA,” <http://greenbuilding.lowellma.gov/about-gbc>.

¹¹⁶ Turcotte, “Personal Interview.”

Commission – one of the most well-known and connected developers in the city, the chairman of the board of Enterprise Bank and Trust was one of the initial people.”¹¹⁷

Coming from a workforce development background, Turcotte understands the particular need for individuals and conditions to align in order to create a supportive environment for progressive job creation. The result was evident when the city won a Pathways Out of Poverty grant in May 2009:

“All these things create a favorable environment that’s conducive to this. So when Jobs for Youth came into town, wanting to apply for [the Pathways out of Poverty] grant, they organized a stakeholder meeting with the various players in workforce development in the City, which I attended with some members of the Green Building Commission ... We voted and provided a letter of support for their application.”¹¹⁸

Here, Turcotte refers to a solar installation job training program, targeted to the city’s Cambodian population, proposed by JFYNetworks, a Boston-based workforce development agency.¹¹⁹ Affiliates and partners on the grant include a range of local organizations, all of which add capacity to the city’s planning and development efforts: Community Teamwork (Lowell’s CAP agency), YouthBuild, the Coalition for a Better Acre (Lowell’s dominant community development corporation), the Cambodian Mutual Assistance Association, the United Teen Equality Center, the Lowell Adult Education Center, the New England Consortium (a worker health and safety training organization based at UMass Lowell). The Institute for Environmental Education (New England’s largest environmental workforce training organization, based in Greater Lowell) is a regional partner on the grant. Whether or not the City Hall’s written support of the Jobs for Youth Pathways application was the deciding factor that secured Lowell’s ranking over Lawrence in the Pathways allocation process is not known, but it demonstrates political will and capacity at the municipal level in

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ After the grant was awarded, the Massachusetts Board of State Examiners of Electricians issued a ruling that only licensed electricians could perform solar installation. This prompted the Clean Energy Center to revise the JFY contract to permit weatherization-training activities, but led to significant delay in program implementation. (<http://www.solarpower.org/News/11300902-massachusetts-electricians-board-would-restrict-solar-installation-to-licensed-electricians.aspx>)

Lowell, valuable to a community's ability to capture limited state resources for green workforce development.

As Turcotte notes, the City's Director of Economic Development, Teresa Park, has taken a proactive approach to green economic development, identifying clean energy as an emerging cluster for the city. "When I think about Green," Park says, "I interpret it in the broadest way possible. I also think that when you have a business cluster, the concentration really helps to market the city better. And now we have a strong cluster of environmental engineering companies here in Lowell in addition to green technology companies."¹²⁰

The University

The tremendous asset that UMass Lowell provides to the city is not lost on its planners. Indeed, someone like Turcotte is able to be active in the Green Building Commission *because* of his work at the University. Aaron Clausen, Associate Planner with the Lowell's Division of Planning and Development, makes it clear that the city has identified the local assets it can leverage in order to gain a foothold in the green economy:

"We have to identify those attributes of the city that are really going to make it stand out above maybe another community. And to that extent, we try to collaborate extensively with the university. We find them to be a great partner and a benefit for companies that are coming to locate here ... "¹²¹

Clausen notes that his office works closely with some clean tech businesses when they first locate in Lowell and has found that part of their location decision has to do with access to a trained workforce and access to relevant programming. The city has also found that the research capabilities provided by the University enables smaller businesses to contract out certain work, thereby expanding their overall capacity. In addition to connecting to resources at the university, Clausen notes that the city also relies on the asset provided by a

¹²⁰ Park, "Personal Interview."

¹²¹ Aaron Clausen, "Personal Interview," January 21, 2010.

global alumni network.

With the U.S.'s only accredited undergraduate program in Plastics Engineering, as well as considerable strengths in green chemistry and nanotechnology, UMass Lowell provides a vital resource to the city in clean tech workforce development. Whether or not, and to what degree, the University's presence will enhance job prospects for the city's lower income residents remains to be seen, but Bob Farrant, a Professor in the University's Regional Economic and Social Development Department makes clear the advantage that the campus gives to Lowell over Lawrence in a competitive regional framework: "The key difference between Lawrence and Lowell is that Lawrence doesn't have a university with a strong science curriculum."¹²²

UMass Lowell is also currently playing a leadership role among three working groups convened by the UMass President's Creative Economy Initiatives Fund, in partnership with the Clean Energy Center, the New England Clean Energy Council and the UMass campuses in Boston and Dartmouth. The working groups include one, based in Boston, that focuses on creating a "Green Jobs Knowledge Model" that integrates clean energy literacy into the K-12 curriculum. The second group, based in Dartmouth, focuses on the education and training pipeline, trying to create a more rationalized pipeline system so that individuals have a clear educational pathway that they can pursue as they move up the ladder. The third group, based in Lowell and led in part by Turcotte, focuses on staffing and supporting economic development and job creation in the clean energy sector.¹²³ Turcotte plans a series of roundtables around the State targeted at bringing industry into the planning process.

¹²² Bob Farrant, "Personal Interview," February 12, 2010.

¹²³ *Developing the University of Massachusetts as a Leader in Growing the 'Green' Economy: A Final Report on the 2008 Creative Economy inter-campus grant to UMass Boston, UMass Dartmouth and UMass Lowell* (University of Massachusetts, January 5, 2010).

Planning Institutions

The Lowell case also highlights the essential role of locally embedded planning and development institutions such as the Lowell Financial and Development Corporation. In 2009, the U.S. Department of Energy launched the first ever Energy Efficiency and Conservation Block Grant (EECBG) program, a grant established by the 2009 American Recovery and Reinvestment Act (ARRA) that includes formula funding for cities to develop and implement programs and projects that (1) reduce fossil fuel emissions; that (2) reduce the total energy use of the public entities; that (3) improve energy efficiency in the transportation, building, and other sectors; and that (4) create and retain jobs.¹²⁴ As part of its \$954,000 EECBG allocation Lowell budgeted \$100,000 to capitalize a financial incentive program to encourage energy efficiency and renewable energy improvements in commercial buildings.¹²⁵ LDFC's close relationship to the City Planning Department, extensive experience managing revolving loan funds, and capacity to help building owners leverage additional funds through local lending institutions make it an ideal manager of the fund. It could be argued that its very presence is what enabled the city to budget for the program at all.¹²⁶

Strong affirmation of Lowell's capacity to plan for green development came on April 21, 2010 when the White House announced the 25 winners of the national "Ramp Up to Retrofit" grant program. The only Massachusetts city selected, Lowell will receive \$5 million to develop a carbon-neutral Park and Preservation District. The City plans to create a model demonstrating the viability of energy efficiency retrofits in historic buildings that adhere to historic standards. Partners on the project include the state's historic preservation

¹²⁴ "Weatherization & Intergovernmental Program: Energy Efficiency and Conservation Block Grant Program," <http://www1.eere.energy.gov/wip/eeecbg.html>.

¹²⁵ "City of Lowell, MA: Energy Efficiency and Conservation Block Grant Application - Budget Justification" (Internal Document, City of Lowell).

¹²⁶ Clausen notes that he had difficulty getting in touch officials in Lawrence to figure out how they were using their Energy Efficiency Block Grant funds. My own attempts to reach Lawrence City Officials to discuss EECBG plans were also unsuccessful.

office and the National Park Service. Individual project financing includes a combination of utility rebates, owner contributions, and other grants and loans.¹²⁷ In many ways, the Ramp Up to Retrofit project is a continuation of the Mogan legacy. Paul Marion describes the strong thematic and ideological connection between energy efficiency retrofits and Mogan's vision:

"Starting with the Mogan Revolution, we've recycled the city. Lowell is essentially a big recycling project. More than 300 buildings have been restored, renovated, preserved. That's recycling on an architectural level."¹²⁸

The Green Jobs Planning Process – Lawrence

In the fall of 2008, an MIT student working with the MIT@Lawrence partnership began reaching out to Lawrence civic leaders in the interest of catalyzing a local conversation about green jobs planning. As a first-year Master Degree Candidate in the Department of Urban Studies and Planning, Eric Mackres was able to build on work done in the previous year by a fellow student, Jeffrey Beam, who had developed a catalogue of the growing number of green initiatives in the city and introduced Mackres to key stakeholders. In a memo he attached to an invitation to the first meeting, Mackres explained his reason for wanting to convene the group, which went on to become Lawrence Green Jobs Working Group:

"Lawrence is an ideal candidate for a green-collar jobs campaign. The city has a strong industrial history and capital assets; a young, poor, and disadvantaged workforce; leading nonprofit community development and youth organizations; new development hoping to incorporate green building; community leaders who are willing to think out of the box; and a large number of diverse, but not yet connected, green activities. Additionally, MIT@Lawrence has over the past decade built a relationship with the city and a strong network of community partners in Lawrence."¹²⁹

The first Working Group meeting in December 2008 represented the beginning of

¹²⁷ "Retrofit Ramp-Up Selected Projects" (White House, April 21, 2010), http://www.energy.gov/news/documents/Retrofit_Ramp-Up_Project_List.pdf.

¹²⁸ Marion, "Personal Interview."

¹²⁹ Eric Mackres, "Lawrence Green Jobs Initiative Launch Meeting, Background Information," December 4, 2008, <http://mitatlawrence.net/projects/student-projects/green-jobs/>.

the kind of multi-sectoral partnership needed to lead and coordinate a comprehensive and equitable green jobs effort for Lawrence. But after about six months, interest in the group among some members waned. They had convened a total of four times, but community non-profits leaders expressed frustration with a lack of leadership from the city.¹³⁰ The Group had also kicked off a series of monthly Green Drinks events, intended to provide networking opportunities for business people, workforce developers and city officials, but despite a large turnout for the inaugural gathering, attendance quickly dwindled. That July, the Green Jobs Working Group merged with the Greater Lawrence Workforce Investment Board's Green Jobs Advisory Council. While the Working Group was had maintained a singular focus on the City of Lawrence, the WIB's service delivery area covers 15 cities and towns. Green jobs in Lawrence became a regional question.

The first meeting of the Council group took place at the Northern Essex Community College Haverhill Campus and was attended by about 40 people, including people from private industry, education providers, vocational training providers, academia and government agencies. Carberry, who convened the Council, explains his thinking behind the initiative:

"Our intent with this Council was to make it a demand driven process for private industry in particular to inform us, to educate us to say these are the things we see as missing skills that the workforce system can help to develop using the various vocational training providers and educational institutions."¹³¹

A second meeting took place in October 2009 at which Marybeth Campbell of the Clean Energy Center outlined the state's support for green jobs. In the absence of any significant workforce demand from employers however, Carberry says he has not had a reason to convene a third meeting.¹³²

Two problems most seem to stymie efforts at workforce development planning in

¹³⁰ Jessica Andors, "Personal Interview," March 5, 2010.

¹³¹ Carberry, "Personal Interview."

¹³² Ibid.

Lawrence. The first is this absence of a clearly articulated demand for workers. As Carberry explains, the demand was simply not as significant as he had anticipated:

“We anticipated a large demand for skilled people for a variety of things; the actual installation of weatherization materials in residences throughout the area and also the analytical side, people that go in and do energy audits. But that hasn’t materialized. I think the traditional construction trades companies and home improvement contractors already have the ability to perform these functions without really having a skill upgrade. Labor is plentiful, so they are not at a point where they are searching for people or having a hard time finding the right people with the right skills. At best, some companies are saying, “Well we think in the next year or two we may hire four or five people, perhaps.”¹³³

The second problem is the city’s historic resistance to strategic planning. As the entity with the strongest planning capacity in the city, LCW, in partnership with Groundwork Lawrence (GWL) emerged as an early, local leader in green workforce planning. LCW took the lead on two state grant applications, Pathways out of Poverty and the Clean Energy Workforce Training Capacity Building grant, administered by the Clean Energy Center. For both applications, LCW and GWL organized partnerships that included MIT, Northern Essex Community College and three local clean energy employers to serve as advisors on curriculum development. In its applications, LCW explained the employers’ need for workers trained in soft skills and job readiness and outlined its capacity for delivery of such training. During the Pathways grant process however, LCW found out that the Workforce Investment Board was submitting a separate application. According to Heather McMann, Executive Director of Groundwork Lawrence, “I think part of this again is a miscommunication. Not everyone’s at the table at the right times.”¹³⁴ Ultimately, the State selected the Lowell Pathways application over that from Lawrence. Marybeth Campbell of the Clean Energy Center the decision:

“Although Lawrence Community Works put together a good proposal for Pathways, ultimately we determined that the organization that was targeting Lowell, JFY Networks, scored slightly better based on its scope and goals. Based on our criterion for

¹³³ Ibid.

¹³⁴ Heather McMann, “Personal Interview,” January 27, 2010.

geographic diversity, we chose to award the Lowell project instead of the Lawrence Community Works proposal. The Lawrence project had a conceptually strong model that we encouraged them to pursue. It's always tough when you know there's potentially good proposals to support, but you have limited dollars to award. Hopefully, there will be other opportunities for Lawrence and others to apply.”¹³⁵

Early on, Jessica Andors, Co-Director of LCW, found the organization's efforts handicapped by the city's lack of understanding of current economic trends, visionary leadership and overall capacity to engage in the necessary day-to-day work.¹³⁶ Lawrence's mayor at the time, Michael Sullivan, interviewed for an article in USA Today, expressed an understanding of the significance of workforce preparedness: “It comes down to the labor skills of the people,” he says, “If you don't have the skills to work and compete, these companies aren't going to hire you.”¹³⁷ His administration however, seemed resistant to coordinating industry leaders and workforce developers to create the needed labor market match.

This particular resistance was perhaps best exemplified when Lawrence's then-Director of Economic Development expressed the need for local jobs at an April 2009 meeting of the Lawrence Green Jobs Working Group: “We're desperate for businesses. I don't care what color these jobs are – blue, green or purple,” but then said that he was unable to ask potential or existing private green industry leaders what would make them come to the green jobs table. Andors later commented, “[The businesses] don't do community development. We do. We can't expect them to come to all of these meetings, but we do need to figure out what incentives they need to sit down with us at all.”¹³⁸ When she asked the city official to reach out to businesses however, he had said that he did not have the time. The recession had indeed forced city employees to work fewer hours, but his resistance seemed consistent with that administration's reluctance to lead any strategic local

¹³⁵ Campbell, “Personal Interview.”

¹³⁶ Andors, “Personal Interview.”

¹³⁷ Lynch, “Slow labor market takes toll on Lawrence, Mass..”

¹³⁸ Andors, “Personal Interview.”

workforce development planning. Heather McMann, of Groundwork Lawrence explains her perspective on the problem:

“I think [Groundwork] has some expertise and relationships in green economy areas like low impact development and landscaping. But I also feel pressure in some of these meetings that if we didn’t step up, it might not go anywhere. There’s a lot of good talking around the table, but no one has the capacity to lead it. I think this happens a lot in Lawrence, that if Groundwork or LCW doesn’t step up, it doesn’t happen.”¹³⁹

Community College

Northern Essex Community College (NECC), which serves Lawrence but is based in neighboring Haverhill, has also struggled with the type of leadership role it might play. The vast majority of NECC graduates are employed within 50 miles, so ascertaining employer demand for a clean energy workforce has been a challenge.¹⁴⁰ Community colleges nationwide have been pinpointed for leadership in green jobs training, but as NECC experienced, the task is a complicated one for several reasons. Staff at Greenfield Community College in Western Massachusetts explain the issues associated with developing and unrolling a green jobs curriculum:

“The demands of fulfilling the requirements of a state grant, the intense task of often ‘inventing’ the wheel or re-inventing it to suit our needs, demands on time and creative energy, shepherding new courses through curriculum committees, combining the often disparate spheres of community education with academic programming, supporting diverse adjuncts with great technical expertise but less formal teaching experience, the perils of registration – the list goes on – is not without headaches. A fine line exists between promoting academic innovation and drifting into insanity.”¹⁴¹

In the fall of 2008, the NECC’s Vice-President of Academic Affairs established an internal Workforce Development Committee to help improve coordination and communication among parts of the college engaged in workforce development. The topic of

¹³⁹ McMann, “Personal Interview.”

¹⁴⁰ Kelly Osmer, “Personal Interview,” February 11, 2010. (Osmer is Dean of the Division of Workforce Development and Community Education at Northern Essex Community College.)

¹⁴¹ Brian Adams, “Greenfield Community College Launches New Curriculum on Renewable Energy and Energy Efficiency,” *Campus Sustainability Perspectives Blog*, March 2, 2009, <http://www.aashe.org/blog/greenfield-community-college-launches-new-curriculum-energy-conservation-and-renewable-energy>.

green jobs came up often.¹⁴² The group works directly with Fred Carberry at the WIB and with Bob Halpin of the Merrimack Economic Development Council, but struggled to define green jobs in the Massachusetts context. This, coupled with the ever-present question of what the college can realistically accomplish with limited funds, has led NECC to take a cautious approach in its response to interest and demand for additions to its curriculum. Currently, however, NECC is a minor partner on a Department of Labor Grant, led by the North Shore Workforce Investment Board, to create programs for energy auditing and weatherization and recently unrolled its first non-credit green job training and certification for weatherization and energy auditors.¹⁴³

Moving Ahead with Clean Technology

Among some civic leaders in Lawrence, there is a clear skepticism about the promise of green jobs. Fred Carberry, for example, spent 25 years in the mini-computer industry with Digital Corporation, located in the Merrimack Valley and, at its peak, second only to IBM in computer manufacturing. In the mid-90s however, Digital sank as it failed to respond to consumer demand for personal computers. Carberry's concerns about the future of clean technology are influenced by this experience:

"I think the [experience of mini computers] applies for the renewable energy systems. I think at first you're going to have a time period of prototype development, research and development and that can certainly benefit from the sophisticated engineering talent and workforce that we have here. But I think it's only a matter of time before these components are built in other countries like China."¹⁴⁴

Despite his difficulty foreseeing a healthy future in clean technology, or finding a reason to convene the group again, Carberry does profess a belief, albeit a measured one, that there is "potential for the green technology industry" in the region.

¹⁴² Osmer, "Personal Interview."

¹⁴³ Ibid.

¹⁴⁴ Carberry, "Personal Interview."

Bob Halpin takes a more cautious but optimistic approach. In efforts to market cities like Lawrence to clean tech companies, he sees value in the Gateway City branding point that allows a business to say, “not only am I green and doing a green tech project, I’m also a renewal story in an industrial city that’s on the comeback.” But a city like Lawrence should require certain things of the businesses it recruits, he adds: “We need to say, ‘put your green company in Lawrence because it’s a good place to be. There’s an employment credit, but we expect some discrete training to be part of the package [like] an hour a day in work on language skills or an hour a day and work [on a new approach to solar installation].” In particular, Halpin sees promise in among businesses that can “enable” cleaner technologies:

“There’s a strength in our region around electrical engineering and in IT and Communications. These are companies that are still very strong and very highly concentrated. They might not be thought of as green, but because they can greatly add to things like energy efficiency and broader integration of renewable energy resources into the electric system, they are enabling green tech. There is a niche.”¹⁴⁵

Maggie Super, of Lawrence CommunityWorks, sees value in Lawrence making a diversified investment in a range of small businesses involved in energy-related and environmentally-friendly work, moving away from the state and regional emphasis on large-scale manufacturing. There’s good reason to advocate a turn in this direction: In November 2009, Evergreen Solar, a solar panel manufacturer based in Devens, Massachusetts announced that it would be moving a portion of its production to China – after the State had already provided \$58 million in state aid for construction of its factory.¹⁴⁶ “Evergreen is the classic example,” she says, “of putting all your eggs in one basket and saying, ‘These guys are going employing a thousand people in three years?’ Well they’re not.” She explains her understanding of what a more sustainable strategy for Lawrence would look like, and why it might work there:

¹⁴⁵ Halpin, “Personal Interview.”

¹⁴⁶ Frannie Carr, “Evergreen Solar To Move Jobs To China,” *WBUR.org*, November 5, 2009, <http://www.wbur.org/2009/11/05/evergreen-china>.

“I think the notion of front end R&D through prototyping/limited run production has a lot of potential in Lawrence because there are people who have started a number of those companies up in this region. Here there is an ethos of: ‘This is where we make things. This is where we invent things and build them and create them’ ... And Lawrence has a tremendous track record in terms of small business start ups, whether it’s a bodega or a software company ... There’s [also] an ability to use the stock of buildings we have here for businesses that need flexible manufacturing space, but not getting so deeply committed that we can’t adapt when either that prototyping process is done or there’s another company that needs that space to do something different ... You can imagine a hundred of these companies coming in, and we help them develop to a point where they’re prototyping.”¹⁴⁷

In Lowell, Paul Marion links the future of clean tech to the Mogan legacy. He sees that the City’s strength in the creative economy as signifying promise for a stable base in clean tech, not only in building retrofits, but also in technological innovation. He explains:

“The creative economy isn’t just about arts and culture ... It’s about creating and selling products and services that are generated through innovation, imagination and invention.” It goes back to Pat Mogan. He pushed Lowell to develop itself as a center for R & D because R & D is inherently renewable. You have a chance to actually keep those jobs.”¹⁴⁸

Challenges

Despite the optimistic outlook of some leaders in the region, considerable challenges lie ahead in clean tech that lie beyond the scope of local planning culture. Dave Turcotte explains that thus far, attempts at data collection on the number of jobs that will be created has been slow: “The real area that we’re struggling with is, in reality, how many jobs are going to be created right now? And what kind of economic impact is it going to have? The concern is that this is less opportunity and more hype.”¹⁴⁹ For Carberry in Lawrence, a major issue has been the capacity of the local CAP agency to administer weatherization funds:

“I’m sure there are hundreds if not thousands of households in the Greater Lawrence area [that would qualify for weatherization grants], but I don’t see the outreach. I assume

¹⁴⁷ Super Church, “Personal Interview.”

¹⁴⁸ Marion, “Personal Interview.”

¹⁴⁹ Turcotte, “Personal Interview.”

it's a capacity problem at the CAP agencies – that they haven't ramped up to deliver the services. I think they're probably hesitant to do too much outreach, because they would be overwhelmed."¹⁵⁰

Carberry's assumption is likely correct as a variety of cities have reported delays in CAP agency distribution of weatherization funds.¹⁵¹ Participants at the June 2009 UMass Lowell Clean Energy Workforce Development Forum also cited two specific obstacles to clean energy workforce development: access to venture capital and a need for "more skilled and talented staff, including those with 'soft' skills such as communication skills."¹⁵² The latter, incidentally, is the niche that Lawrence CommunityWorks, in partnership with other groups, has been trying to fill in Lawrence.

¹⁵⁰ Carberry, "Personal Interview."

¹⁵¹ Benjamin Brandin, "Capitalizing on a Third Wave of Federal Investment: Reenvisioning an Energy Efficiency Retrofit Strategy for Oakland, California" (Cambridge, Mass.: Massachusetts Institute of Technology, 2010).

¹⁵² *Developing the University of Massachusetts as a Leader in Growing the 'Green' Economy: A Final Report on the 2008 Creative Economy inter-campus grant to UMass Boston, UMass Dartmouth and UMass Lowell.*

– Chapter 4 – A Networked Approach to Green Job Creation

Engaging People as Agents of Change

Comparing Lawrence's experience with green jobs planning to that in Lowell reveals that the original physical design shaped a pattern of economic investment, political leadership, and planning culture in each city's current approach to planning for the emerging clean tech economy. Applying a careful study to the overarching question of green job creation, I have gathered stories and data about how each city operates individually, as well as in the broader region, and identified an existing paradigm of competitive regionalism. If the development agenda for the green economy does not diverge from previous development agendas, then by virtue of its history, Lawrence is literally designed to lose. Unless place-based job creation programs address Lawrence's historic lack of planning capacity, residents will struggle to gain a foothold in clean tech economy and lose out to their upriver neighbors. As a result, the latest round of federal and state programs and private investment may only perpetuate the ongoing disadvantage that Lawrence has faced since deindustrialization and, arguably, since its creation.

To develop a robust clean energy economy in Massachusetts and apply a regional approach to economic development (as the Governor describes it his Framework for Action), the state should first work to seed deeper local planning capacity in communities such as Lawrence and subsidize inter-municipal coordination that otherwise does not occur. All Gateway Cities face individual development obstacles, but a strong Gateway Cities program focused on green job creation should seek to equalize the advantages among the cities in the cohort by understanding and addressing the very *local* obstacles to development that they face.

How then might we move ahead? The original MassInc report on the Gateway Cities includes two recommendations that are reinforced by my research. First, there is a pressing need for community colleges and public universities in the Gateway Cities to take a more proactive role in sparking and anchoring economic development. MassInc refers to the need to raise the skill level of Gateway City residents to enable them to compete in the knowledge economy;¹⁵³ this argument extends to the clean energy economy as well. The authors also call on public institutions of higher education to “foster an ethic of intergovernmental, inter-sectoral, [and] human, collaboration,”¹⁵⁴ and argue for the Gateway Cities to buck their historic reliance on individual businesses, factories, and governments in favor of collaborative competition. In particular, MassInc emphasizes the need to establish partnerships, nurture networks and build interconnected regions so that the cities and their regions can compete together – not against each other.

How then do we get people to engage with one another in a way that is collaborative, forward-looking, and grounded in place? Given that there is no equivalent of the community development corporation in the workforce development field, I argue that planners might look to the network organizing strategy developed by LCW to guide an alternative workforce development framework for the city and region. I aim to adapt what has been a successful approach to community organizing in a long distressed community to an idea of growth that lifts up the region.

If the LCW network function is to create a demand environment for change, then the function of a green workforce development network should be to engage people and institutions as agents of change and link otherwise disconnected people and institutions. As an analytical tool, a networked approach also helps to reveal, from the inside out, the relationships that stakeholders might not have realized were missing. In the case of

¹⁵³ *Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal*, 45.

¹⁵⁴ *Ibid.*, 8.

Lawrence and Lowell, the networked approach affirms that the pieces needed are in fact there; no new institutions necessarily have to be created, but new connections must be forged and some groups must be strengthened. These ideas of interconnectedness, regions, network building and the creation of new habits of engagement among and around the Gateway Cities is, I believe, essential to both the success of the state's clean tech agenda and the ability of cities like Lawrence to overcome historically rooted obstacles to development and revitalization. In effect, a networked approach to planning helps to illuminate the "organized plan" and "division of labor" needed to manufacture recovery.

A Role for Regionalism

Lawrence needs a local development strategy, but its economy is an inherently regional one – it was designed to be – and so economic planning for the city needs to take place at both the local *and* regional levels. Bill Traynor explains Lawrence's relationship to the region: "The purpose of Lawrence was to service its region. In addition to being a manufacturing machine, Lawrence was the commercial center of the region."¹⁵⁵ Today, Lawrence's service to its region manifests in the labor it supplies to surrounding communities. Despite strides in the city's health care industry (combined with educational services and social assistance, health care provides employment for over 20 percent of residents¹⁵⁶) most Lawrencians must look outside city limits for work. In 2006, Andrew Herlihy, then Regional Industry Manager of the Merrimack Valley Workforce Investment Board, explained:

"Lawrence produces workers for the entire region, in literally every direction. Lawrence residents are working in everything from retail and landscaping in Methuen, to nursing homes in Andover, to manufacturing, warehousing and transportation in Amesbury and Newburyport, to the industrial parks in Wilmington and Haverhill. Hospitality businesses in Southern Maine are even looking to Lawrence for workers. We are a labor

¹⁵⁵ Traynor, "Personal Interview."

¹⁵⁶ American Community Survey, 2006-2008.

exporting city.”¹⁵⁷

Traynor contrasts this with Lowell, whose original purpose from a commercial perspective, he says, “was not to service its region. It was to service itself.”¹⁵⁸

In the context of the clean tech economy though, Lowell will need to engage with surrounding cities and towns. According to Aaron Clausen of Lowell’s Planning Department, the city can host head offices and research and development operations to support green economic development, but will have to take a regional approach since renewable energy manufacturers will may have land intensive needs that Lowell cannot accommodate.¹⁵⁹ Despite the constraints that Lawrence’s small size has placed on its development opportunities in the past, the city currently has a significant amount of unoccupied and underutilized mill space, which could provide an important asset to clean tech companies.

Obstacles to Regional Planning

Although regional planning organizations operate throughout Massachusetts, state regulations largely limit planning to the municipal level, frustrating those who would like to see a stronger inter-municipal effort. The Citizen’s Housing and Planning Association (CHAPA) calls on the State to improve coordination among cities and towns:

“The State could help facilitate greater cooperation between and among municipalities to plan better for new development by finding ways to overcome obstacles to cooperation, such as increasing incentives to forge inter-municipal agreements where participating communities make investments and share benefits.”¹⁶⁰

The absence of these agreements has led to a climate of competitive regionalism, albeit an unintended one. With limited funds, such as in the Pathways program, State officials strive

¹⁵⁷ *The People’s Guide to the Lawrence City Budget* (Lawrence CommunityWorks, 2006).

¹⁵⁸ Traynor, “Personal Interview.”

¹⁵⁹ Clausen, “Personal Interview.”

¹⁶⁰ *The State of the Cities: Revitalization Strategies for Smaller Cities in Massachusetts*, 48.

for a regional distribution of money, but without coordinating mechanisms to facilitate communication and coordination among cities, impact of such programs is limited to the individual city.

For the Gateway Cities, the classification itself may also impede regional planning. Since release of the MassInc report, mayors of the Gateway Cities have formed a caucus to advocate for state resources. But according to Bob Halpin, the caucus lends itself to an individualized, “silo-ed” approach, which it perpetuates among the cities:

“I think the way the Gateway Cities idea is playing out is indicative that there is a group of mayors who have an agenda that you can’t argue with in the standpoint of a city. But if a city like Lawrence needs to be connected to the larger regional economy, there should be a level or organization in the Gateway Cities agenda that’s regionally focused and not just city focused. Otherwise, you’re just going to continue to operate in these silos instead of engaging in what the region needs to do.”¹⁶¹

In effect, the classification unites the cities based on shared characteristics, but isolates them from their geographic regions. In the case of Lawrence, Lowell and Haverhill – another Gateway City less than ten miles northeast of Lawrence – it isolates them from each other. Maggie Super, of Lawrence CommunityWorks, explains her perspective on this problem in light of the allocation process for Pathways grants:

“If there is a region that inevitably enfolds more than one of the cities they’re trying to support, you end up with competition that, ultimately I think, is not going to produce the results that they’re looking for. It’s certainly not going to help much. That much we already know.”¹⁶²

Among the cities, support for regional planning is even. Halpin shares his perspective:

“My mission in life, success for me, is to get Lowell, Lawrence, Haverhill as three cities that are pursuing the same development agenda. But I think there is a much, much more openness in Lowell to that notion than there is in Lawrence or Haverhill.”¹⁶³

For Lawrence to engage in the clean energy economy at the regional level, it needs to overcome the limitations built into not only in its original design, but also into a tradition of

¹⁶¹ Halpin, “Personal Interview.”

¹⁶² Super Church, “Personal Interview.”

¹⁶³ Halpin, “Personal Interview.”

competitive planning in Massachusetts and into the constraints of the Gateway Cities classification. But what might a regional strategy look like? How might the cities of Lowell, Lawrence and Haverhill better coordinate their planning and development strategies in the green economy? How do we analyze potential connections among cities and ascertain which are feasible and which are not? And how do we overcome real divisions among the cities, like racial bias, language barriers and lack of transportation access, as well as psychological divisions, such as the perception that a place is too far to permit coordination?¹⁶⁴

Applying Principles of Network Organizing

In low-income communities, the absence of networks can impede residents' ability to access certain assets, such as jobs with upward mobility. The idea of network building however had not gained traction in the non-profit sector until Lawrence CommunityWorks began applying network theory in the community development/community organizing context.¹⁶⁵ Bill Traynor and Jessica Andors, two of the originators of the LCW Network Organizing strategy, explain the approach, which draws on certain established principles of community organizing:

“The principal twist is the application of network theory, a set of ideas that come from the technology and economics fields but that are proving useful for understanding and shaping our community environments. Applying this thinking to our work has helped us to challenge some of the common obstacles to genuine engagement, and shape a strong *demand environment* for change.”

By creating an environment in which residents have the opportunity to get to know people they otherwise would not, access new information and resources, and experiment with ideas

¹⁶⁴ In an interview, Heather McMann of Groundwork Lawrence made the following comment, highlighting the issue of psychological barriers and the real absence of coordination: “I do think there’s a mental divide between Lawrence and Lowell and going that far out. I think it’s crazy though that Lawrence and Haverhill are not working together.”

¹⁶⁵ Robert Preer, “Making Connections: In Lawrence, a CDC builds more than homes and businesses,” *CommonWealth*, Summer 2005.

for local development, Lawrence CommunityWorks has created a nationally recognized approach to encouraging residents in a struggling community to work together to improve the city. Members of the staff are careful to note that there is no specific model for Network Organizing. Rather, it is a *set of principles* that community groups can test and adapt in a range of environments.¹⁶⁶ Thus far, LCW has consulted with organizations in cities that include Denver, Des Moines, Hartford, Louisville, McAllen (in Texas), Oakland, and Silver Spring and seen these principles applied in a variety of ways.¹⁶⁷

There are several principles of Network Organizing can be applied in the green jobs context. First, the existence of multiple *hubs and nodes* is essential to the health of a network. A strong network cannot depend solely one large organization, charismatic leader or booming company. In LCW's approach, these are institutions and forums – such as a cohort of women saving money to start small businesses or a group of residents participating in a leadership development program – that serve different, but complimentary, functions in advancing the aims of the network. The hubs and nodes of a green jobs planning network might be organized around adult workforce development practitioners, real estate developers who support clean tech incubation, and politicians who advocate on behalf of the region at the state and federal levels.

These hubs and nodes are, in turn, connected by a *relationship-based infrastructure*.

Traynor explains the role of relationships in creating place-based communities:

“At the cellular level, place-based community begins with a single relationship of trust and mutual benefit in which one resident or stakeholder shares with another. It is the aggregate of those relationships—along with the loose connections that bind a diversity

¹⁶⁶ Most of the principles I draw on here are articulated in Traynor and Andors, “Network Organizing: A Strategy for Building Community Engagement.” Others I include based on my work experience with LCW.

¹⁶⁷ During my four years at LCW, I had the opportunity to either participate in some of these consulting visits or hear about them from my co-workers.

of them together—that forms not community, but the structural framework for community to exist.”¹⁶⁸

The network draws its strength not only from the strongest of its relationships – those between individuals and groups with long histories of connection and trust – but also from its weakest. These are the loose connections that Traynor describes. They are ties that, under business as usual, would not exist. Once forged, these *weak links* provide new opportunities for people, giving them access to information and resources outside of their normal comfort zone.¹⁶⁹ Weak links also ensure that when one person, node or hub suffers a setback, it does not undermine or take down the entire effort. In a planning context, weak links might be forged between two cities’ Directors of Economic Development who have never met, a green chemistry researcher at UMass Lowell and a mill developer in Lawrence, or a middle school science teacher and the Directors the Workforce Investment Boards of nearby communities.

These links do not form on their own however. Sociologists like Robert Putnam dedicate much effort to discussion of social capital and its role in strengthening civil society, but LCW has gone further to formalize the role of individuals who actively connect people to each other in a network. Calling them *weavers*, Traynor and others at LCW recognize the entrepreneurship of these individuals and their work as agents of social capital creation. “The weaver’s job is to be intentionally curious about people, their interests and connections; to connect that person to our organization; and to link that person to one other thing going on in the Network.”¹⁷⁰ In the LCW Network, weavers are considered the foremost leaders of the community building process. Groups like the MVEDC, UMass Lowell and the Clean Energy Center are potential weavers of a green jobs planning network.

¹⁶⁸ William J. Traynor, “Community building: Limitations and promise,” in *The Community Development Reader* (New York: Routledge, 2008), 215.

¹⁶⁹ Traynor and Andors, “Network Organizing: A Strategy for Building Community Engagement.”

¹⁷⁰ Ibid.

Another important principle of LCW's Network Organizing strategy is *provisionality*, the notion that programs, committees and projects should exist only as long as they are useful and serving the function they were intended to serve. Traynor and Andors explain that efforts in community building "suffer greatly when dysfunctional structures ... persist long after they are no longer useful."¹⁷¹ Thus, LCW staff and members recognize that programs and committees are inherently provisional – "useful only in that they get us where we need to go."¹⁷² Provisionality requires flexibility and a willingness to adapt programs or projects in response to demand or shifting conditions. It also requires that people not become overly attached to ideas, committees or roles. Although economic development and job creation, like community development, requires long-term goals and strategies, the notion of provisionality is essential in order for planners to meet the demands of shifting consumer demands, business needs and state programs.

Network Organizing also emphasizes the need to value and capitalize on existing assets, not unlike the philosophy that guided Patrick Mogan's vision for the revitalization of Lowell. A networked planning approach to green jobs should also be asset-based, recognizing the assets that the city brings to the state's green economy. In Lawrence there already exist the following assets: A business environment supportive of start ups and small businesses, dense walkable neighborhoods and commercial corridors, a highly organized Lawrence CommunityWorks membership, a high capacity environmental planning organization in Groundwork Lawrence, a large youth population (33 percent under the age of 18), a strong environment for start-up businesses,¹⁷³ easy transit and highway accessibility, significant available and relatively low-cost building stock for commercial and residential use, a rich industrial history, a compelling story of renewal, and an ambitious new Mayor.

¹⁷¹ Ibid.

¹⁷² Ibid.

¹⁷³ Gary Sidell, "Personal Interview," February 17, 2010. (Sidell is a accomplished developer and property manager in the city of Lawrence.)

Bob Halpin, formerly of the MVEDC, describes the need for networks and their relationship-based infrastructure in the context of regional economic development:

“I think that regional development is a series of relationships between companies and institutions like UMass and Community Colleges and the communities themselves, so there is this network of relationships and it’s not just the Regional Planning Agency doing their thing regionally or the Workforce Investment Board doing their thing regionally or Northern Essex Community College doing their thing regionally. It’s connecting the dots between all of those and having a broad agenda that leverages all of their relationships around some common strategy.”¹⁷⁴

He adds though that he has yet to see the State currently promote this understanding of regionalism:

“For all of the talk about the importance of regionalism and so forth, the State has not gotten the relationship end of it. What they’ve been trying to do is get each one of those actors better, which is not to be discouraged, but it’s not the answer in my opinion. The answer is pulling them all together around a common agenda and with some performance expectations.”¹⁷⁵

Mapping the Network

With a common agenda to create green pathways out of poverty in the Gateway Cities, what would it look like for the state and for cities to “get the relationship end of it”? In the interest of improving collaboration and coordination among stakeholders in Lawrence and Lowell, I argue that it would require the articulation of certain hubs and nodes that include (but are not limited to) the following people and groups:

- *Political:*
 - U.S. Congresswoman Niki Tsongas
 - Clean Energy Center (also provides financial capital)¹⁷⁶
 - City of Lawrence
 - City of Lowell
- *Regional Planning/ Workforce Development Agencies:*
 - Merrimack Valley Planning Commission (Lawrence)
 - Northern Essex Council of Governments (Lowell)
 - Merrimack Valley Economic Development Council

¹⁷⁴ Halpin, “Personal Interview.”

¹⁷⁵ Ibid.

¹⁷⁶ Financial capital is a key hub of a green job creation network, but is not explicitly included in particular map.

- Merrimack Valley Workforce Investment Board (Lawrence)
 - Greater Lowell Workforce Investment Board
 - Greater Lawrence Community Action Council (CAP Agency)
 - Community Teamwork (Lowell CAP Agency)
- *Private Developers:*
 - Bell Tower Square/Union Crossing (Lawrence)
 - Wannalancit Mill (Lowell)
- *Community/Labor Organizing and Advocacy:*
 - Labor Unions
 - Lawrence CommunityWorks/Groundwork Lawrence/YouthBuild
 - Coalition for a Better Acre/United Teen Equality Center/YouthBuild (Lowell)
- *Higher Education:*
 - UMass Lowell
 - Northern Essex Community College (Lawrence)
 - Middlesex Community College (Lowell)
- *Secondary Education:*
 - Greater Lawrence Regional Vocational Technical High School
 - Greater Lowell Regional Vocational Technical High School
 - Lawrence High School
 - Lowell High School
 - Lawrence Middle Schools
 - Lowell Middle Schools

Under the current approach to green jobs planning, informal relationships exist, particularly among those within individual cities. Certain groups have also established more formal partnerships, as demonstrated in the Pathways grant applications described in Chapter Three. However, in the absence of self-identified weavers, or those who intentionally seek to build relationships and grow the network (and/or lack adequate federal or state funding to support this type of activity), neither the strong nor weak links are consistently or strategically activated to support stronger coordination across the two cities.

I argue that certain individuals and groups should take on the role of weavers in green job creation given the leadership. They include: U.S. Congresswoman Niki Tsongas, the Clean Energy Center, UMass Lowell, the City of Lawrence, the Merrimack Valley Economic Development Council, the Merrimack Valley Workforce Investment Board, the Greater Lowell Workforce Investment Board, Lawrence CommunityWorks/Groundwork Lawrence/Lawrence YouthBuild, and the Coalition for a Better Acre/United Teen Equality

Center/Lowell Youth Build. All of these groups have demonstrated some degree of leadership in green economic development, but articulation of their roles as weavers can help to formalize the activity of engaging people and institutions as agents of change. By activating otherwise latent relationships to generate weak links, weavers provide much-needed network stability. Appendix 5 includes a network map representing potential networked connections, both strong and weak, to support stronger clean tech collaboration between Lawrence and Lowell.¹⁷⁷

Under the current, more disconnected approach, certain goals are difficult to accomplish. Below, I provide examples of how a networked approach might help Lawrence and Lowell to achieve one mutually beneficial short-term and long-term goal.

How a Network Can Facilitate Clean Tech Business Incubation in Lawrence: Now

From a business development perspective, a networked planning approach could help certain stakeholders identify and connect assets across the two cities, facilitating in the short-term the kind of small-scale and flexible clean tech development that Maggie Super envisions for Lawrence. In this sense, the network functions as an important analytical tool because it reveals a creative real estate development and property management team in Lawrence, potential business opportunities coming out of UMass Lowell, and an (as yet) non-established connection between them.

Gary Sidell is the son of Chester (“Chet”) Sidell, former owner of the KGR garment company in Lawrence and once the owner of six properties in the city, totaling over 500,000 square feet of mill space. Today the younger Sidell is property manager of Bell Tower Square, a property at 60 Island Street that his father sold to Juan and Lou Yopez in 2009. As a property manager, Sidell sees Lawrence offering three particular advantages to clean tech

¹⁷⁷ Although it lies beyond the scope of this study, the asset base of Haverhill and other surrounding communities should be analyzed and incorporated as well.

start ups, including transportation and a physical environment inside rehabilitated mill buildings that encourages creativity and innovation. Most important though, he says, is that businesses will find affordable space: “And for a start up, that’s everything.” Sidell also explains his intention to be as flexible and supportive as possible when new businesses come to him: “Offering good pricing is one thing, but also understanding a startup is important. Those first six to twelve months are critical. So if the landlord is flexible with that initial term, and is willing to take a little chance on the startup, I think that helps their success.”¹⁷⁸

Sidell has a strong track record of providing space for a diverse group of small businesses and young organizations in Lawrence. As the original developers of Bell Tower Square, Chet and Gary Sidell did not want to be tied to any one particular industry sector and instead created a home for a mix of businesses, including many start-ups. Today, the property is the most actively used of the Lawrence’s mill buildings, which ironically, may be due to Sidell’s selective approach to development: “Rather than saying ‘every single square foot I can rent, I’m just going to rent,’ I spend a lot of time making sure that the company coming in is a good fit.”¹⁷⁹ Business activities in the building include: advertising, publishing, software development, consulting, law, medicine, adult education, software development, and non-profit work. Sidell has noticed that several of the businesses will contract services out to each other, like in printing and web design, and sometimes also share employees. (He has yet to take on any manufacturers, preferring to connect them to building owners more open to industrial uses and in turn, helping out those owners.)

Currently, the Sidells are working in partnership with Lawrence CommunityWorks and the Yepez brothers on development of Union Crossing, a project that includes 400,000 square feet of renovated and newly built mill space. Plans include a mix of affordable apartments, retail shops, small companies, a day-care center, and possibly a satellite campus

¹⁷⁸ Sidell, “Personal Interview.”

¹⁷⁹ Ibid.

for one of the area colleges. Sidell says he would love to bring clean energy projects to the site:

“I don’t have any clean tech companies [at Bell Tower Square], but I love the idea [of incubating them at Union Crossing]. I’ll also be honest to say that we’d like to have a component of incubator space, it’s just that the economics have to work.”¹⁸⁰

What emerges as a green opportunity for Lawrence then is the possibility of incubating small clean energy companies that bring to market the intellectual capital developed at a place like UMass Lowell. Subsidies from the State, with support from the federal government as well, could make this financially feasible for the development team. An entity such as the MVEDC would be important to serve as weaver, facilitating these connections.

How a Network Can Facilitate Long-Term Educational Attainment: The Longer View

When I met with Joaquin Santana, a Lawrence resident interested in finding work in solar installation, I asked him how he would advise planners and policymakers on green job creation. He replied with the following:

“My suggestion is that they try to build consciousness among students, so that from now on, they learn about clean energy. This is the moment; the students now are the future. If tomorrow, we run out of oil, they’ll have the knowledge that other types of energy exist and the ability to make the most of them. That’s my idea.”¹⁸¹

Although a system might not currently exist that would have, for example, enabled Joaquin Santana to readily access information on enrollment in JFY’s Pathways out of Poverty program in Lowell (now focused on energy efficiency and weatherization instead of solar), a system should be implemented to facilitate a flow of information, resources and people, so that as the green economy grows, young people have such opportunities. The slow pace of current economic recovery does not help to alleviate the protracted unemployment many are experiencing, but planners and policymakers should take the opportunity to develop and

¹⁸⁰ Ibid.

¹⁸¹ Santana, “Personal Interview.”

implement systems that prepare young people in struggling communities such as Lawrence to obtain the skills they'll need to participate in a future equitable green economy.

Thus, an explicit goal for the network could be education and workforce development for future generations of Lawrence residents like Joaquin Santana. Networked and coordinated academic planning in and between Lawrence and Lowell could facilitate the implementation curricula that track middle school students through science and technology programs. These curricula would be “vertical” in that they are linked to educational opportunities at community colleges and UMass – Young people who might not be prepared for the university can first go to the community college and get training there that makes them eligible for jobs in clean tech or to pursue further studies in a range of clean tech fields at UMass. And they would be “horizontal” in that they link educators and young people to each other and to opportunities across communities. By creating direct connections among secondary schools and institutions of higher education, Lawrence students will have better access to UMass Lowell and university researchers and entrepreneurs will have improved access to the assets that Lawrence provides.

The UMass Boston campus is currently working on developing a K – 12 clean energy curriculum, in partnership with the Clean Energy Center. Marybeth Campbell relates an anecdote highlighting the value of bringing an environmental framework to an otherwise standard chemistry curriculum:

“John Warner [former head of Green Chemistry at UMass Lowell] has great stories about how he went to UMass and Princeton and never once took a toxicology course. He’s a chemist and now he’s doing green chemistry because he thought it environmentally important – but was never given the skills to do that. When you hear that story, it’s like, ‘Yeah, chemists *should* take a toxicology class.’ So we want to do that on the energy side too, create a link of stability from K – 12 to College and PhD [in the environmental part of the curriculum] so that it’s just second nature, rather than layered on later in your career.”¹⁸²

¹⁸² Campbell, “Personal Interview.”

While faculty at UMass Lowell are currently pursuing funding to implement a vertical curriculum in Lowell that would track students in a course of science and technology studies from middle school to the university, a network approach will help to ensure that students in Lawrence are afforded the same opportunities. Adapted to fields like nanotechnology, green manufacturing, and green chemistry, a networked vertical curriculum, in which the schools in one community not only function as a node but are also linked to public educational nodes in other communities (i.e. “weak links”), could open up a range of doors for the youth in Lawrence to whom Santana refers. Provisionality ensures that if programs are no longer working or effective, they are disbanded in favor of new forms.

In this scenario, the University functions as a weaver facilitating crucial connections in the network. While over time, faculty and administrators have made some effort to connect with organizations and individuals in Lawrence, it has historically focused its efforts on Lowell, so a more intentional and explicit approach would be necessary. Through the combined political leadership of U.S. Congresswoman Niki Tsongas and UMass Lowell Chancellor (and former Congressman) Marty Meehan, this would be possible. Given Tsongas’ support for green jobs (she is a founding member of the Sustainable Energy and Environment Coalition in the U.S. House of Representatives, leading efforts to promote clean energy innovation and domestic manufacturing) and strong relationships with both Meehan and staff members of Lawrence CommunityWorks and Groundwork Lawrence, her leverage is valuable.

Implementation of a Networked Approach to Green Job Creation

Participation at the local, inter-city/regional, state and federal levels is important to support the development of regional green jobs networks that support Lawrence, Lowell, Haverhill and other Gateway Cities. Although a great deal can be accomplished in the

private sector alone, there is no substitute for a city government that actively seeks connections with other communities. From the regional standpoint, Halpin says that the City of Lawrence needs to take a lead in the effort for stronger regional coordination. In terms of its participation in the Merrimack Valley Economic Development Council, he says “the City [was] absent for eight years.” Overall, he finds that local level public sector leaders in a variety of places continue to see development “as a zero sum game, with it being competitive instead of being cooperative.”¹⁸³ The current Mayor of Lawrence, William Lantigua, should make relationship building and coordination with leaders in surrounding cities a priority for his administration.

At the regional level, strong leadership from UMass Lowell and a willingness to connect university assets to opportunities outside the city are critical. Businesses – which benefit from regional agglomeration – can also ally with regional entities in this effort. Halpin notes that members of the business community are increasingly embracing the notion of the regional economy and supporting efforts at collaboration and cooperation. Given that the MVEDC works with the Workforce Investment Boards of Greater Lowell, the Merrimack Valley, and the North Shore, thus encompassing the northeast region of Massachusetts, it is also naturally positioned to play a leadership role in promoting a more collaborative regional approach to planning. Currently however, funding for the MVEDC is precarious, undermining the organization’s ability to play a strong leadership role.

The re-commitment of state aid to support MVEDC is essential. In the interest of facilitating coordination among the state’s eight regional economic development councils, state leadership is also necessary. Halpin explains the current deficit in this area: “The eight regional EDCs have relationships where they cooperate and share information, but there’s

¹⁸³ Halpin, “Personal Interview.”

no real operational relationship where we pursue a common agenda that's led by the Governor and his administration. Rhetorically yes, but in operation, no.”¹⁸⁴

In terms of green workforce development, the State should issue Requests for Proposals that require and subsidize coordination among the geographically proximate groups and pairs of Gateway Cities: Lowell-Lawrence-Haverhill, New Bedford-Fall River, and Springfield-Holyoke.¹⁸⁵ Grants to the other Gateway Cities – Fitchburg, Brockton, Worcester, Pittsfield – should subsidize both the planning process to assess unleveraged assets that lie in surrounding communities and the relationship-building necessary to connect these assets to opportunities and needs within the city.

State officials might argue that this type of state-level policymaking and program development is unrealistic. It requires a willingness to understand the histories of individual cities and to integrate planning processes with local political, economic and social structures so that cities can take advantage of opportunities that arise. Although it is the nature of state agencies to support cities that are already likely to succeed – it is both easier and yields desirable results – the real job of the state should be to help the cities that are not necessarily going to win.¹⁸⁶

In certain grant applications, the state asks for evidence of regional partnerships, but leaders in both Lawrence and Lowell note the need for requirements (rather than incentives) and direct subsidies to support collaboration among local organizations. Aaron Clausen describes this issue:

“The one obstacle to regional planning that I find is the capacity on everybody's level to find the time to do it [get together for planning purposes]. The reality is that it is difficult to coordinate a lot of these things ... and [there are limits to] human resource capacity at the community level to reach beyond town and city borders.”

¹⁸⁴ Ibid.

¹⁸⁵ Reference pathways grant

¹⁸⁶ Paul Levy, “Personal Interview,” December 15, 2009. (Levy was head of the Massachusetts Water Resources Authority under Governor Dukakis.)

Jessica Andors succinctly explains, “collaboration is not cheap and it’s not always organic. You need to incentivize it.”¹⁸⁷ Heather McMann, of Groundwork Lawrence, concurs and recommends subsidies to support non-profits’ ability to engage in more collaborative planning:

“The more types of collaborative planning I engage in, the more I realize how important it is. But when I’m looking at my busy schedule and I have to go to a full day site visit with other folks, getting me there at first is tough. It’s not as if there’s money there. It matters that I’m actually getting paid to do this planning and thinking and supporting of other groups. [It’s hard to] prioritize if you’re also trying to raise money for salaries and get programs going.”¹⁸⁸

McMann cites a positive experience with The Trustees of Reservations’ Putnam Conservation Institute, which in 2009 initiated a two-year Urban Park Advocates Network building process that funds urban park advocates from the Gateway Cities to come together and maintain regular communication.

At the federal level, Pew Charitable Trusts finds that investments in clean energy are likely to increase in 2010, when the government is slated to spend one-third of clean energy stimulus funding.¹⁸⁹ Although the U.S. dominates in clean energy venture finance and technology innovation, Pew finds that it falls behind other countries in manufacturing. As discussed above, public subsidies to support small-scale manufacturing are particularly important, as is support to cash-strapped states to help subsidize regional planning among localities.

The current federal recovery program however, is not consistently providing regions, cities or towns the opportunity to identify and articulate the assets and needs they have in the context of this more expansive notion of green economic development. There are two critiques in particular: that (1) stimulus funds have been allocated to “shovel ready” projects with the primary objective of fast distribution at the expense of revamping the inefficient

¹⁸⁷ Andors, “Personal Interview.”

¹⁸⁸ McMann, “Personal Interview.”

¹⁸⁹ *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America.*

and/or ineffective delivery systems that were in place and that (2) although some grants encourage regional planning, the overall “silo-ing” of stimulus funds does not facilitate a regional approach. In essence, the economic reality requires a regional approach to development that, under the current system, does not naturally occur.¹⁹⁰

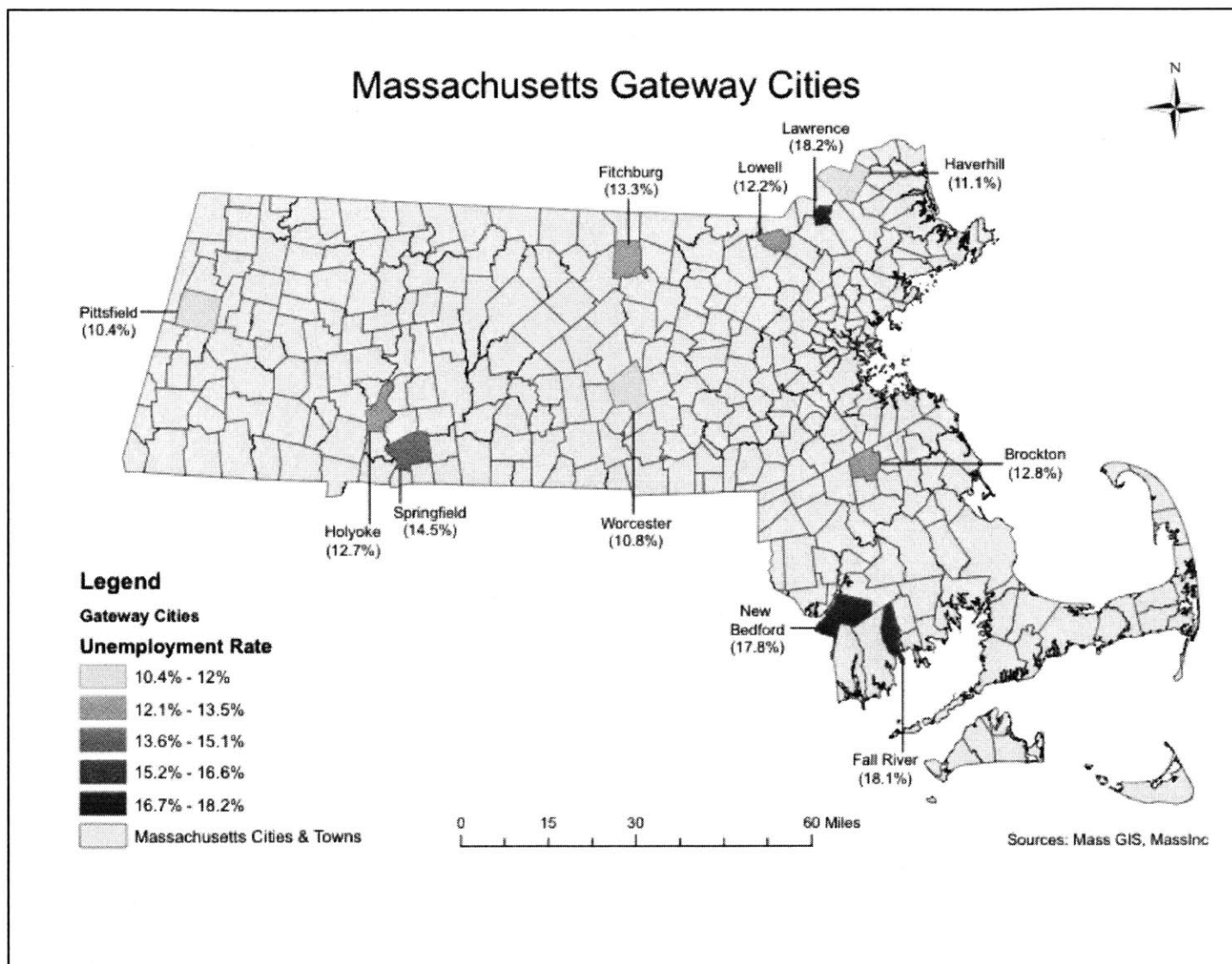
Xavier de Souza Briggs, MIT Professor of Urban Planning and current Associate Director for General Government Programs at the White House Office of Management and Budget, elaborates on HUD Secretary Donovan’s description of the New Federalism (discussed in the Introduction):

“You’re going to see us take this notion of place-based policy and use it as a discipline, use it as a focusing device across agencies and within them across their programs ... If we can create real strategies that strengthen communities, both rural and urban, what’s the most appropriate role for the federal investments and for regulations that shape local action? And how can the federal government better organize itself to act like one government and not dozens of stovepipes?”¹⁹¹

Federal government officials clearly express a desire to develop more place-specific urban policies – and, as observed in this case study, Massachusetts State officials like Campbell do as well – but there are few publicly-funded programs to support regional governance and planning. The political will to acknowledge that a one-size-fits all policy will not work for all American cities or even those classified according to historic economic base, such as the Gateway Cities. The need remains to implement a more expansive, networked approach to organizing federal, state, regional and local communication so that the public and private sectors can successfully address the intricately linked matters of clean tech development and increased employment opportunity in historically neglected communities.

¹⁹⁰ Vey, “Personal Interview.”

¹⁹¹ “Shelterforce Interview: Xavier de Souza Briggs,” *Shelterforce*, Fall 2009, http://www.shelterforce.org/article/shelterforce_interview_xavier_de_souza_briggs/shelterforce_interview_xavier_de_souza_briggs/P0/.



– Appendix 2 –

Primary State-led Gateway Cities-related Programs

Gateway Parks Program (Energy and Environmental Affairs)

\$4 million in annual funding to projects that improve park quality and advance park equity in urban communities; funds projects in acquisition, environmental clean-up, planning and assessment, design, construction, and other park-related expenditures in 18 communities

Gateway Plus Action Grants (Department of Housing and Community Development)

\$1.35 million to 18 cities to support affordable housing and economic development opportunities for mixed-income communities; includes the cities of Chelsea, Chicopee, Fitchburg, Haverhill, Holyoke, Lawrence, Leominster, Lowell, Lynn, Methuen, New Bedford, Pittsfield, Revere, Salem, Springfield, Taunton, Westfield and Worcester. Each city received a maximum one-time planning grant of \$75,000.

Brownfields Support Team Initiative (Department Environmental Protection)

State initiative that brings together state agencies to target resources to high-impact sites requiring significant remediation; in July 2008, the State designated five BSTI sites, including locations in Fall River, Springfield, Worcester, Grafton and Haverhill.

Pathways Out of Poverty (Energy and Environmental Affairs)

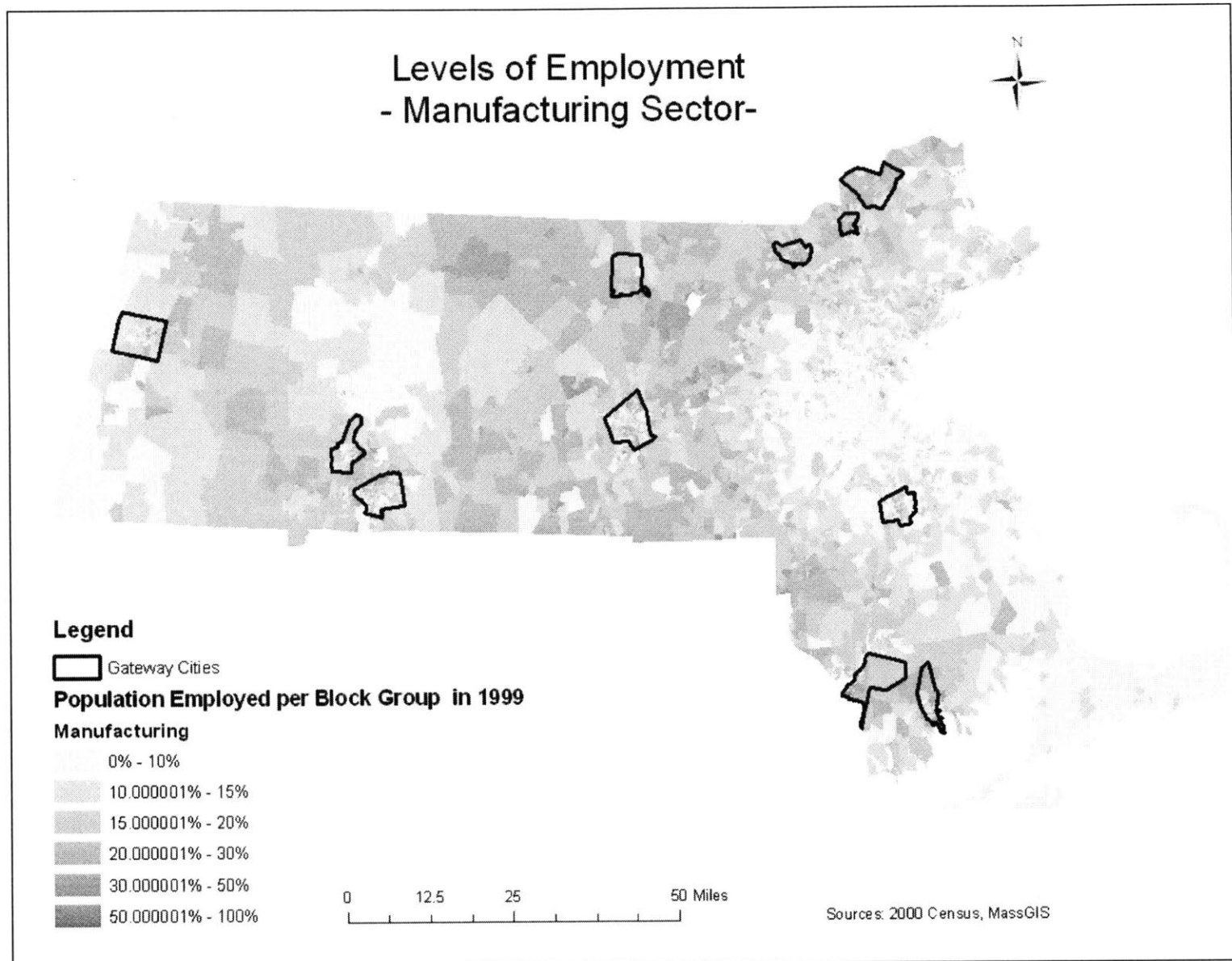
\$1 million in funding to support job training programs in the clean energy industry that move training participants towards financial self-sufficiency; targeted towards projects serving Gateway Cities (Brockton, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Lowell, New Bedford, Pittsfield, Springfield and Worcester).

Growth Districts Initiative (Executive Office of Housing and Economic Development)

EOHED partners with municipalities that have identified one or more areas within their communities as appropriate for significant new growth – commercial, residential or mixed-use. Within identified “growth districts,” EOHED provides assistance with local permitting, state permitting, site preparation (including brownfields remediation), infrastructure improvements, and marketing; intended to increase “development readiness” within designated growth districts. Municipalities include: Attleboro, Burlington, Chicopee, Devens, Fall River, Foxborough, Haverhill, Lawrence, Lowell, Lynn, New Bedford, Pittsfield, Plymouth, Revere, Somerville, Springfield, Weymouth, Worcester

Communities Count Initiative (Department of Housing and Community Economic Development)

State partnership with communities announced June 30, 2009. Intended to leverage federal and state dollars to help create jobs, stabilize neighborhoods hit by foreclosure and support businesses during economic downturn. Anticipated to leverage more than \$6 million in state, federal, and local resources; launched in Springfield’s South End Neighborhood.



– Appendix 4 –

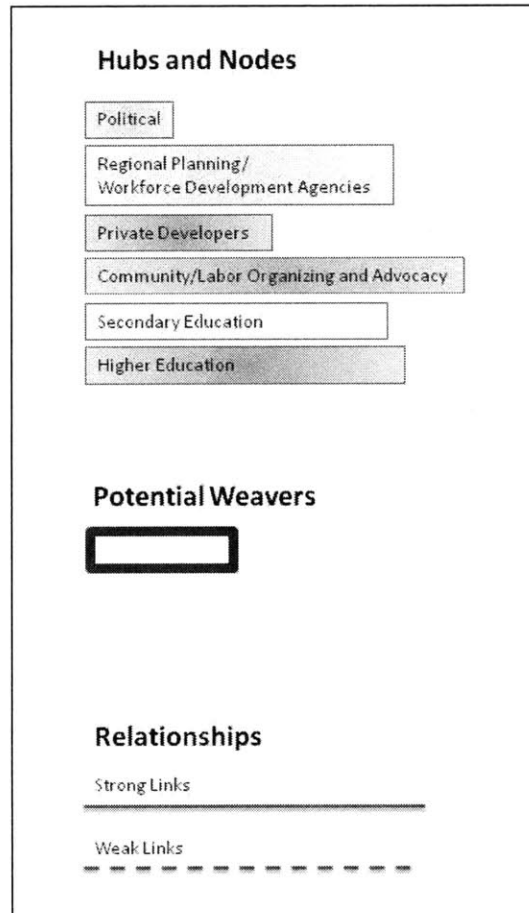
	Lawrence	Lowell	Massachusetts
Land area (square miles)	6	13	7,840
Total population	71, 234	98, 766	6,469,770
Race/Ethnicity (% of population)			
White	30.2	62.5	82.7
Black	3.2	6.0	6.1
Latino	70.8	15.9	8.3
Asian	2.5	17.9	4.8
Age			
Median Age	29.8	34.4	38.5
Population under 18	31.1	24.9	22.2
Income/Poverty Status			
Median household income (\$)	32,007	50,944	64,684
Families whose income is below poverty (%)	24.8	15.5	7.1
Female-headed households with children under 18 living below the poverty level (%)	51.3	45.4	32.3
Top Industries for Employment (% of Population Employed)			
Manufacturing	22.0	19.8	10.1
Educational services, health care and social assistance	20.8	22.7	25.7
Retail trade	10.5	9.9	10.8
Arts, entertainment, recreation, accommodation and food services	10.4	9.4	7.9
Professional, scientific, management, administrative and waste management services:	9.6	10.6	12.6
Finance, insurance, real estate, rental and leasing	3.9	5.4	8.3
Construction	4.6	6.3	6.3
Transportation, warehousing and utilities	5.1	3.6	3.8
Other services (except public administration)	4.3	4.6	4.4
Levels of Educational Attainment (% of Population)			
Graduate or professional degree	4	8	16
Bachelor's degree	8	14	22
Associate's degree	6	7	8
Some college, no degree	15	16	16
High school diploma or equivalency	31	33	28
Less than high school diploma	36	22	12

Source: American Community Survey, 2006-2008

– Appendix 5 –

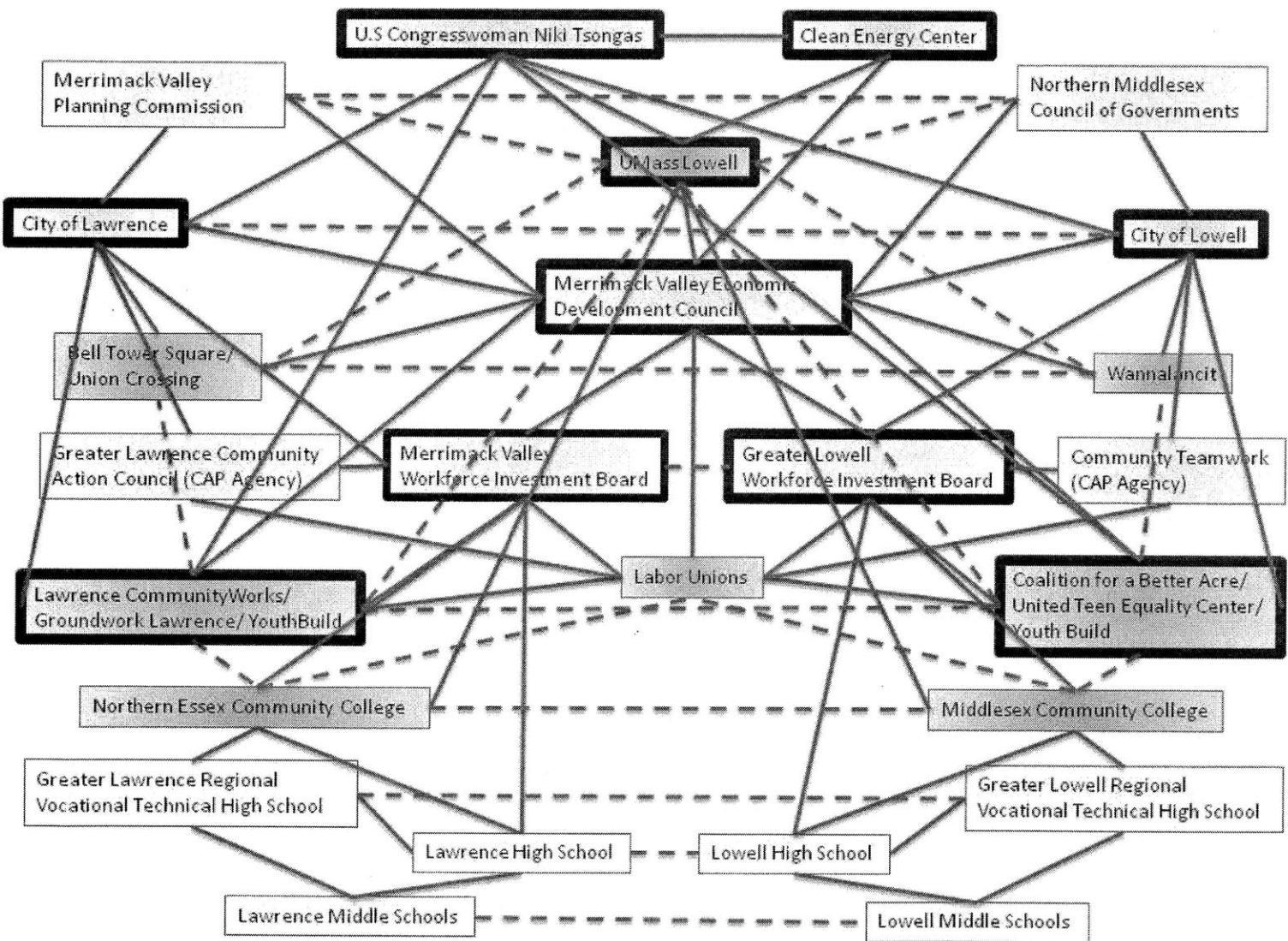
Network Map: Relationships to Support Lawrence and Lowell Clean Tech Collaboration

Map Key



– Appendix 5, continued –

Network Map: Relationships to Support Lawrence and Lowell Clean Tech Collaboration

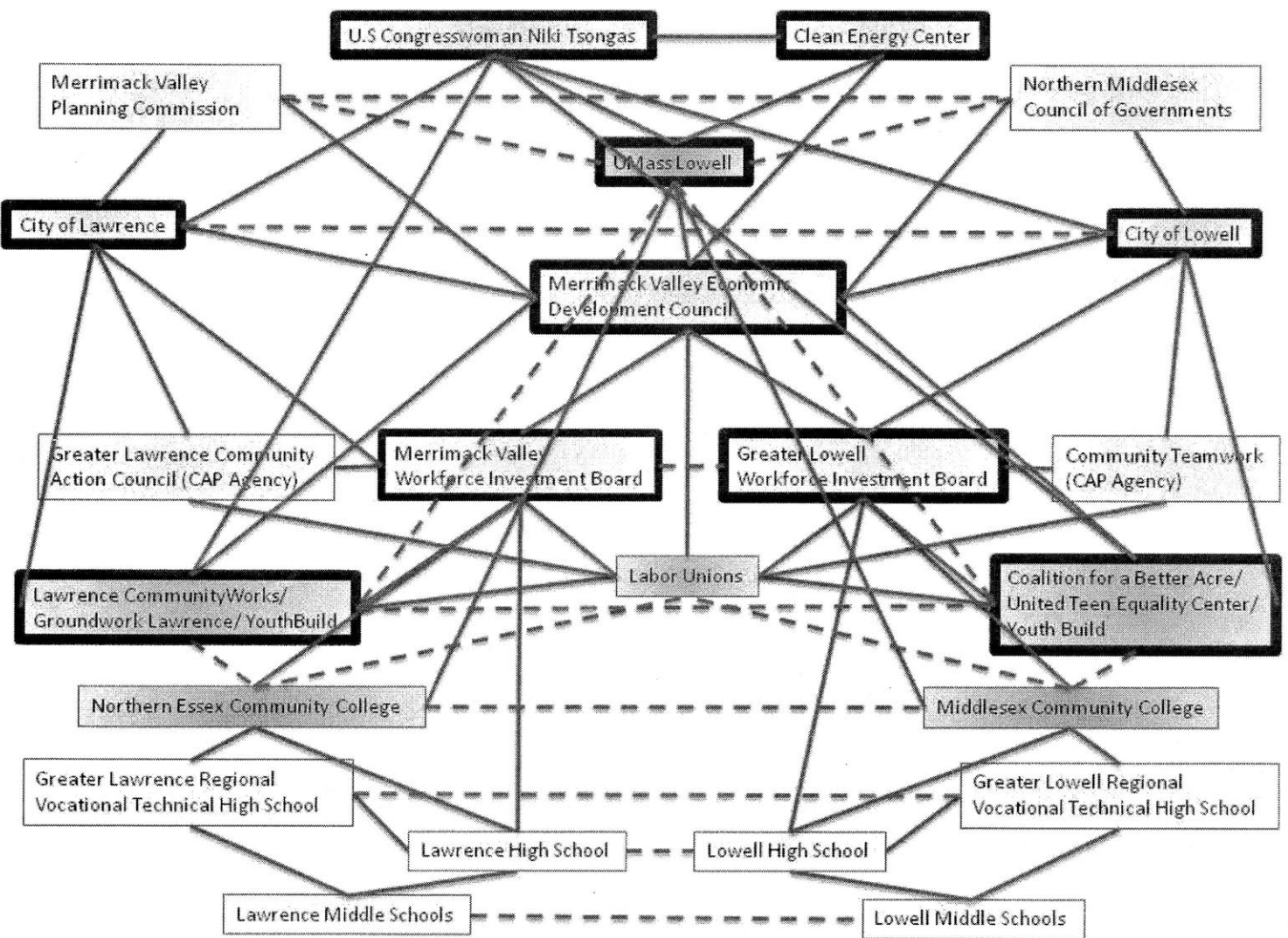


Short-Term Network Function: Business Development



– Appendix 7 –

Long-Term Network Function: Educational Attainment and Workforce Development



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